This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

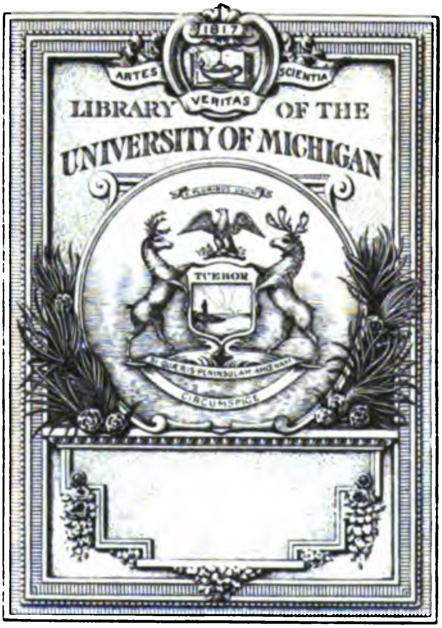
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

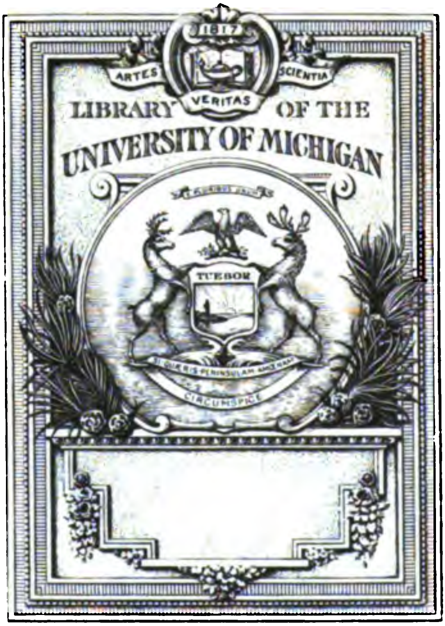
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`



LIBRARY OF THE
UNIVERSITY OF MICHIGAN

HA
1
.R887
J8


1817
ARTES
SCIENTIA
VERITAS
LIBRARY OF THE
UNIVERSITY OF MICHIGAN
E PLURIBUS UNUM
TUEBOR
SI QUÆRIS PENINSULAM AMŒNAM
CIRCUMSPICE

HA
1
.R887
J8

JOURNAL

33699.

OF THE

ROYAL

STATISTICAL SOCIETY.

(Founded 1834.)

INCORPORATED BY ROYAL CHARTER 1887.

VOL. LI.—YEAR 1888.

LONDON:
EDWARD STANFORD, 26 AND 27, COCKSPUR STREET,
CHARING CROSS, S.W.

1888.

NOTICE.

THE Council of the Royal Statistical Society wish it to be understood, that, while they consider it their duty to adopt every means within their power to test the facts inserted in this *Journal*, they do not hold themselves responsible for their accuracy, which must rest upon the authority of the several Contributors.

ROYAL STATISTICAL SOCIETY,

9, Adelphi Terrace, Strand, W.C., London.

Honorary President.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.

COUNCIL AND OFFICERS.—1888-89.

Honorary Vice-Presidents

(having filled the Office of President).

The Rt. Hon. The Earl of Derby, K.G.
James Heywood, Esq., F.R.S., F.G.S., &c.
The Right Hon. G. Shaw Lefevre, M.P.
The Right Hon. Lord Brassey, K.C.B.
Sir James Caird, K.C.B., F.R.S.
Robert Giffen, Esq., LL.D.
Sir Rawson W. Rawson, K.C.M.G., C.B.
The Right Hon. G. J. Goschen, M.P.

President.

T. GRAHAM BALFOUR, ESQ., M.D., F.R.S., F.R.C.P., &c.

Honorary Physician to Her Majesty The Queen.

Vice-Presidents.

Frederick B. Garnett, Esq., C.B.
Rowland Hamilton, Esq.
Robert Lawson, Esq., LL.D.
The Rt. Hon. The Earl of Rosebery.

Trustees.

James Heywood, Esq., M.A., F.R.S.
Sir John Lubbock, Bart., M.P., F.R.S.
Sir James Caird, K.C.B., F.R.S.

Treasurer.

Richard Biddulph Martin, Esq., M.A.

Council.

Sir G. Baden-Powell, K.C.M.G., M.P.
Arthur H. Bailey, F.I.A.
Alfred Edmund Bateman.
Charles Booth.
Stephen Bourne.
Edward H. Carbutt, M.I.M.E., J.P.
J. Oldfield Chadwick, F.R.G.S.
Major Patrick George Craigie.
Professor Edgeworth, M.A.
Thomas Henry Elliott.
Professor H. S. Foxwell, M.A.
Frederick Brooksbank Garnett, C.B.
Rowland Hamilton.
Noel A. Humphreys.
Frederick Halsey Janson, F.L.S.
J. Stephen Jeans.
Charles Malcolm Kennedy, C.B.
Sir John B. Lawes, Bt., LL.D., F.R.S., &c.
Robert Lawson, LL.D.
George Blundell Longstaff, M.A., M.B.
John Biddulph Martin, M.A.
Richard Biddulph Martin, M.A.
Francis G. P. Neison, F.I.A.
William Ogle, M.A., M.D., F.R.C.P., &c.
Francis Sharp Powell, M.P.
R. Price-Williams, M. Inst. C.E.
James Rankin, M.P.
Ernest George Ravenstein, F.R.G.S.
The Rt. Hon. The Earl of Rosebery.
Sir Reginald Earle Welby, K.C.B.

Honorary Secretaries.

John Biddulph Martin, M.A.
Alfred Edmund Bateman.
Major P. G. Craigie.

Foreign Secretary.

John Biddulph Martin, M.A.

Assistant Secretary and Librarian.

Joseph Whittall.

Bankers.—Messrs. Drummond and Co., Charing Cross, S.W., London.

CONTENTS.

VOL. LI.—YEAR 1888.

March, 1888.

PAGE

"Defects of English Railway Statistics." By **SIR JULAND DANVERS**, K.C.S.I., the Public Works Secretary at the India Office, and Government Director of the Indian Railway Companies .... 1— 21

Discussion on Sir Juland Danvers's Paper .... 22— 32

"Progress, Organisation, and Aims of Working Class Co-operators." By **MR. BENJAMIN JONES**, Manager of the London Branch of the Co-operative Wholesale Society, Limited........ 33— 63

Discussion on Mr. Benjamin Jones's Paper .... 64— 73

"Some Canadian Railway and Commercial Statistics." By **JOSEPH G. COLMER, ESQ.** .... 74—101

Discussion on Mr. J. G. Colmer's Paper .... 102—112

MISCELLANEA:—

I.—"The Mathematical Theory of Banking." By **F. Y. EDGEWORTH, ESQ., M.A.** .... 113—127

II.—Financial and Commercial History of 1887 .... 127—136

III.—Fires in London and the Metropolitan Fire Brigade in 1887 .... 136—140

IV.—The Effects of Shipping Bounties. (A translation)........ 141—154

V.—"Prices of Commodities in 1886 and 1887." By **A. SAUERBECK** .... 154—157

VI.—Distribution of Incomes in Germany. (A translation) 158—161

VII.—Unsuitable Subjects for Official Statistics 161, 162

VIII.—The Abuse of Statistics. (A translation) 162, 163

MISCELLANEA—*Contd.*

PAGE
IX.—German Literature in 1886 and 1887 .... 163, 164
X.—English Literature in 1887 .... 164—166
XI.—American Literature in 1886 and 1887 166
XII.—The World's Big Ports .... 167—169
XIII.– Notes on Economical and Statistical Works .... 169—186
XIV.—Quarterly List of Additions to the Library .... 186—200

PERIODICAL RETURNS:—

Registrar-General's Report, and Meteorological Table for England and Wales for the Year ending 1887.—The same for Scotland.—Births, Deaths, and Marriages of the United Kingdom.—Foreign and Colonial Produce Exported, 1886-82.—Trade of the United Kingdom, 1887-86-85.—Imports and Exports.—Shipping.—Gold and Silver Bullion and Specie.—Average Prices of Corn in England and Wales.—Bank of England Returns.—Revenue Returns.—The London Clearances and Country Bank (Note) Circulation in United Kingdom.—Foreign Exchanges .... 201—224

June, 1888.

"Progressive Taxation as Levied in Switzerland. Cantons Basel-Stadt, de Vaud, and Uri." By R. H. INGLIS PALGRAVE, ESQ., F.R.S. .... 225—267
Discussion on Mr. Palgrave's Paper .... 268—275
"Condition and Occupations of the People of East London and Hackney, 1887." By CHARLES BOOTH, ESQ. .... 276—331
Discussion on Mr. Booth's Paper .... 332—339

MISCELLANEA:—

I.—Professor Leone Levi, LL.D. Obituary Notice of .... 340—342
II.—Dr. F. X. von Neumann-Spallart. „ .... 343—346
III.—"Some New Methods of Measuring Variation in General Prices." By F. Y. EDGEWORTH, ESQ., M.A. .... 346—368

MISCELLANEA—*Contd.*

PAGE

IV.—Emigration and Immigration in the Year 1887 .... 368—375

V.—Relative Advantages of the Railways and Waterways of Germany. (A translation) .... 375—396

VI.—Statistics of the Russian Empire, 1884-85 .... 396—398

VII.—Notes on Economical and Statistical Works .... 398—414

VIII.—Quarterly List of Additions to the Library .... 414—432

September, 1888.

Report of the Council to the Fifty-Fourth Annual General Meeting of the Royal Statistical Society, held on the 26th of June, 1888 .... 433—447

Proceedings of the Fifty-Fourth Annual General Meeting 448, 449

The English Poor Rate: some Recent Statistics of its Administration and Pressure. By MAJOR P. G. CRAIGIE .... 450—485

Discussion on Major Craigie's Paper .... 486—493

"West Barbary;" or, Notes on the System of Work and Wages in the Cornish Mines. By L. L. PRICE, ESQ., M.A. 494—566

The "Quantitation" of Stock Exchange Values. By ARTHUR ELLIS, ESQ. .... 567—589

Discussion on Mr. Ellis's Paper .... 590—598

MISCELLANEA:—

I.—"The Statistics of Examinations." By PROFESSOR F. Y. EDGEWORTH, M.A. .... 599—635

II.—Statistics of Incomes in Prussia, Saxony, and the United Kingdom. (A translation) .... 635—649

III.—Agriculture and Prices in the Seventeenth Century .... 649—654

IV.—Notes on Economical and Statistical Works .... 654—664

V.—Quarterly List of Additions to the Library .... 664—682

December, 1888.

PAGE

The Inaugural Address of DR. T. GRAHAM BALFOUR, F.R.S., &c., Honorary Physician to Her Majesty the Queen, President of the Royal Statistical Society. Session 1888-89 .... 683—700

Proceedings on the 20th November, 1888 .... 701—703

"Economic Science and Statistics." The Address of the President of Section F of the British Association, at the Meeting, held at Bath, in September, 1888. By the RIGHT HON. LORD BRAMWELL, LL.D., F.R.S., &c. .... 704—712

"Recent Changes in Prices and Incomes Compared." By R. GIFFEN, ESQ., LL.D. .... 713—805

Discussion on Mr. Giffen's Paper .... 806—815

MISCELLANEA:—

I.—Report of a Committee with reference to the Census of 1891 .... 816—818

II.—Index Numbers as illustrating the Progressive Exports of British Produce and Manufactures. By STEPHEN BOURNE, ESQ. .... 819—823

III.—The Wages of the Working Classes in Berlin .... 823—826

IV.—Awards for Meritorious Discoveries and Inventions 826, 827

V.—Notes on Economical and Statistical Works .... 827—838

VI.—Quarterly List of Additions to the Library .... 838—855

INDEX to vol. li (1888) .... 856—877

APPENDIX. List of Members, Rules, Bye-Laws, &c. .... 1—86

(Corrected to 31st December, 1888.)

ROYAL STATISTICAL SOCIETY.

(FOUNDED 1834. INCORPORATED 1887.)

9, ADELPHI TERRACE,
STRAND, W.C., LONDON.

Contents.

	PAGE
COUNCIL AND OFFICERS	See front pages of the *Journal*
NOTICES TO FELLOWS	
CALENDAR FOR SESSION 1888–89	
PROGRAMME OF THE SESSION 1888-89	
OBJECTS OF THE SOCIETY	
LIST OF THE PUBLICATIONS OF THE SOCIETY	
CONTENTS OF THE SOCIETY'S JOURNAL FOR 1888	8
LIST OF THE FORMER PATRON AND PRESIDENTS	9
Do. FELLOWS	10
Do. HONORARY FELLOWS	57
INDEX TO RULES AND BYE-LAWS	64
RULES AND BYE-LAWS OF THE SOCIETY	65
REGULATIONS OF THE LIBRARY	69
DONORS TO THE LIBRARY DURING THE YEAR 1888	70
REPORT OF COUNCIL TO THE ANNUAL GENERAL MEETING IN 1888	77
FORM OF BEQUEST	92

LONDON:
PRINTED FOR THE SOCIETY,
BY HARRISON AND SONS, 45 AND 46, ST. MARTIN'S LANE,
Printers in Ordinary to Her Majesty.
1889.

CONTENTS OF VOL. LI.

OF THE

Royal Statistical Society's Journal,

FOR THE YEAR 1888.

Part I—*March*, 1888.

PAGE

"Defects of English Railway Statistics." By SIR JULAND DANVERS, K.C.S.I., the Public Works Secretary at the India Office, and Government Director of the Indian Railway Companies .... 1— 21

"Progress, Organisation, and Aims of Working Class Co-operators." By MR. BENJAMIN JONES, Manager of the London Branch of the Co-operative Wholesale Society, Limited .... 33— 63

"Some Canadian Railway and Commercial Statistics." By JOSEPH G. COLMER, ESQ. .... 74—101

Miscellanea .... 113—200

Periodical Returns .... 201—224

Part II—*June*, 1888.

"Progressive Taxation as Levied in Switzerland. Cantons Basel-Stadt, de Vaud, and Uri." By R. H. INGLIS PALGRAVE, ESQ., F.R.S. .... 225—267

"Condition and Occupations of the People of East London and Hackney, 1887." By CHARLES BOOTH, ESQ. .... 276—331

Miscellanea .... 340—432

Part III—*September*, 1888.

Report of the Council to the Fifty-Fourth Annual General Meeting of the Society, held on the 26th of June, 1888 .... 433—447

Proceedings of the Fifty-Fourth Annual General Meeting 448, 449

"The English Poor Rate: some Recent Statistics of its Administration and Pressure." By MAJOR P. G. CRAIGIE .... 450—485

"'West Barbary;' or, Notes on the System of Work and Wages in the Cornish Mines." By L. L. PRICE, ESQ., M.A. .... 494—566

"The 'Quantitation' of Stock Exchange Values." By ARTHUR ELLIS, ESQ. .... 567—589

Miscellanea .... 599—682

Part IV—*December*, 1888.

The Inaugural Address of DR. T. GRAHAM BALFOUR, F.R.S., &c., Honorary Physician to Her Majesty the Queen, President of the Royal Statistical Society. Session 1888-89 .... 683—700

Proceedings on the 20th November, 1888 .... 701—703

The Address of the President of Section F—Economic Science and Statistics—of the British Association, at Bath, in September, 1888. By the RIGHT HON. LORD BRAMWELL, LL.D., F.R.S., &c. 704—712

"Recent Changes in Prices and Incomes Compared." By ROBERT GIFFEN, ESQ., LL.D. .... 713—815

Miscellanea .... 816—854

Annual Index to vol. li (1888).

Appendix: Lists of Members, Bye-Laws, &c.

ROYAL STATISTICAL SOCIETY.

Founded 15*th March*, 1834, *Incorporated* 31*st January*, 1887.

LIST OF THE FORMER

Patron and Presidents

OF THE SOCIETY.

Patron.

	Period.
His Royal Highness The Prince Consort, K.G.	1840–61

Presidents.

The Most Noble the Marquis of Lansdowne, F.R.S.	1834–36
Sir Charles Lemon, Bart., M.P., LL.D., F.R.S.	1836–38
The Right Hon. the Earl Fitzwilliam, F.R.S.	1838–40
The Right Hon. the Viscount Sandon, M.P. (afterwards Earl of Harrowby.)	1840–42
The Most Noble the Marquis of Lansdowne, K.G., F.R.S.	1842–43
The Right Hon. the Viscount Ashley, M.P. (afterwards Earl of Shaftesbury.)	1843–45
The Right Hon. the Lord Monteagle	1845–47
The Right Hon. the Earl Fitzwilliam, F.R.S.	1847–49
The Right Hon. the Earl of Harrowby	1849–51
The Right Hon. the Lord Overstone	1851–53
The Right Hon. the Earl Fitzwilliam, K.G., F.R.S.	1853–55
The Right Hon. the Earl of Harrowby, K.G., D.C.L.	1855–57
The Right Hon. the Lord Stanley, M.P. (now Earl of Derby.)	1857–59
The Right Hon. the Lord John Russell, M.P., F.R.S. (afterwards Earl Russell.)	1859-61
The Right Hon. Sir J. S. Pakington, Bart., M.P., G.C.B. (afterwards Lord Hampton.)	1861–63
Colonel W. H. Sykes, M.P., F.R.S.	1863–65
The Right Hon. the Lord Houghton, D.C.L., F.R.S.	1865–67
The Right Hon. W. E. Gladstone, M.P., D.C.L.	1867–69
W. Newmarch, Esq., F.R.S., Corr. Mem. Inst. of France	1869–71
William Farr, Esq., M.D., C.B., D.C.L., F.R.S.	1871–73
William A. Guy, Esq., M.B., F.R.S.	1873–75
James Heywood, Esq., M.A., F.R.S., F.G.S.	1875–77
The Right Hon. George Shaw Lefevre, M.P.	1877–79
Thomas Brassey, Esq., M.P. (now the Right Hon. Lord Brassey.)	1879–80
Sir James Caird, K.C.B., F.R.S.	1880–82
Robert Giffen, Esq., LL.D.	1882–84
Sir Rawson W. Rawson, K.C.M.G., C.B.	1884–86
The Right Hon. George Joachim Goschen, M.P., LL.D., F.R.S.	1886–88

LIST OF FELLOWS.

*Those marked thus * have compounded for their Annual Subscriptions.*

The names of Members of Council are printed in SMALL CAPITALS.

Year of Election.	
1876	Abrahams, Israel, F.R.G.S., 52, *Russell-square, W.C.*
1883	Ace, Rev. Daniel, D.D., F.R.A.S., *Laughton Vicarage, Gainsborough.*
1888	Ackland, Thomas, G., F.I.A., *St. Mildred's House, Poultry E.C.*
1888	Acland, Arthur Herbert Dyke, M.A., M.P., 35, *Cadogan-terrace, S.W.*
1862	Acland, Sir Henry Wentworth, K.C.B., M.A., M.D., F.R.S., *Oxford.*
1869	Acland, The Rt. Hon. Sir Thomas Dyke, Bart., F.R.G.S., *Killerton, Exeter; and Athenæum Club, S.W.*
1879	Adam, Robert (*City Chamberlain*), *City Chambers, Edinburgh.*
1853	*Addington, The Right Hon. Lord, *Bank of England, E.C.*
1867	Addison, John, *Colehill Cottage, Fulham Palace-road, S.W.*
1884	Agius, Edward Tancred, 90, *Belsize-park-gardens, N.W.*
1886	Ainslie, William George, M.P., 23, *Abingdon-street, S.W.*
1876	Aitchison, William John, 2, *Princes-street, E.C.*
1885	Aitken Thomas, 63, *St. Vincent-street, Glasgow.*
1879	Akers-Douglas, Aretas, M.P., J.P., *Chilston Park, Maidstone, Kent.*
1841	Aldam, William, J.P., D.L. *Frickley Hall, Doncaster.*
1876	Aldwinckle, Thomas Williams, 2, *East India-avenue, Leadenhall-street, E.C.*
1887	Allard, Alphonse (*Directeur de la Monnaie*), *Brussels, Belgium.*

Year of Election.	
1876	Allen, John T. R., 13, *York-road, Hove, Brighton.*
1877	Allen, Joseph, *West Riding Chambers, Halifax, Yorkshire.*
1871	Anderson, Sir James, F.R.G.S., F.G.S., 50, *Old Broad-street, E.C.*
1886	Andras, Henry Walsingham, F.I.A., 25, *Pall Mall, S.W.*
1871	Angus, R. B., *Montreal, Canada.*
1884	Anning, Edward James, 78, *Cheapside, E.C.*
1885	Antonio, John, 9, *College-green, Dublin.*
1872	*Archibald, William Frederick A., M.A., 4, *Brick-court, Temple, E.C.*
1888	Asch, William, 1, *Draper's-gardens, E.C.*
1883	Aschenheim, Gustav, 27, *Mincing-lane, E.C.*
1884	Ashwell, Henry, *Woodthorpe Grange, Sherwood, Notts.*
1883	Askey, Frederick Day, *The Park, Highgate, N.*
1888	Atkinson, Charles, *Benhilton, St. Saviour's-road, Croydon.*
1871	Atkinson, George W., 1, *Regent-street, Barnsley.*
1870	Avery, Thomas, *Church-road, Edgbaston, Birmingham.*

1872	*Babbage, Major-General Henry Prevost, *Yorkleigh, St. George's-road, Cheltenham.*
1872	*Backhouse, Edmund, *Bank, Darlington.*
1879	BADEN-POWELL, SIR GEORGE, K.C.M.G., M.P., 8, *St. George's-place, Hyde Park Corner, S.W.*
1855	BAILEY, ARTHUR HUTCHESON, F.I.A., 7, *Royal Exchange, E.C.*
1858	Baines, Sir Edward, *St. Ann's-hill, Burley, Leeds.*
1881	Baines, Jervoise Athelstane, C.S., *c/o Post Office, Bombay, India.*
1882	Baker, Captain Daniel, *Avenue House, Hagley-road, Edgbaston, Birmingham.*

Year of Election.
1884 Baker, George,
12, *Burwood-place, W.*
1887 Baker, John,
21, *Queen Anne's-gate, S.W.*
1879 Baker, W. Mills,
The Holmes, Stoke Bishop, near Bristol.
1887 Baldwin, Alfred, J.P.,
Wilden House, near Stourport.
1885 Balfe, Richard Ambrose,
2, *Foster-place, Dublin.*
1878 Balfour, The Right Hon. Arthur James, M.P., LL.D.
4, *Carlton-gardens, S.W.*
1848 Balfour, General Sir George, K.C.B., M.P., D.L.,
6, *Cleveland-gardens, Bayswater, W.*
1886 Balfour, Gerald William, M.P.,
32, *Addison-road, Kensington, W.*
1873 Balfour, Jabez Spencer,
4, *Marlborough-gate, W.*
1865 BALFOUR, T. GRAHAM, M.D., F.R.S., F.R.C.P. (*President*),
Coombe Lodge, Wimbledon-park, S.W.
1886 Ball, Sidney, M.A.,
St. John's College, Oxford.
1877 Barbour, William Boyle, M.P.,
Woodlands, Paisley, and Devonshire Club, S.W.
1880 *Baring, Thomas Charles,
High Beach, Loughton.
1886 Barker, W. E., B.A.,

1884 Barlow, William Henry, F.R.S., C.E.,
2, *Old Palace-yard, S.W.*
1887 Barnes, Joseph Howard, F.I.A.,
1, *Moorgate-street, E.C.*
1885 Barratt, Thomas J.,
75, *New Oxford-street, W.*
1887 *Barrett, Thomas Squire, F.Z.S., M.A.I., F.R. Hist. Soc.,
New Athenæum Club, Suffolk-street, S.W.
1883 Barron, Thomas Walter, M.A., M.B., M.R.C.S., &c.,
10, *Old Elvet, Durham.*
1888 Barrow, Alfred,
Weston-street, Southwark, S.E.
1878 Barry, Francis Tress,
St. Leonard's-hill, Windsor.
1888 *Bartlett, Frederick W.,
Worcester-park, Surrey.
1888 Barton, Ebenezer Johnstone, M.A.,
East India United Service Club, St. James's-square, S.W.
1873 Bate, George,
75, *Heaton Park-road, Newcastle-on-Tyne.*

Year of Election.	
1877	**BATEMAN, ALFRED EDMUND** (*Secretary*), *Board of Trade, Whitehall-gardens, S.W.*
1888	Batten, John W., 3, *Harcourt Buildings, Temple, E.C.*
1876	Baxter, Robert, 6, *Victoria-street, Westminster, S.W.*
1877	Bayfield, Arthur, 95, *Colmore-row, Birmingham.*
1886	Bayly, Alfred, 117, *Powis-street, Woolwich.*
1873	*Baynes, Alfred Henry, F.R.G.S., 19, *Castle-street, Holborn, E.C.*
1871	*Baynes, William Wilberforce, F.I.A., 32, *Moorgate-street, E.C.*
1875	*Beardsall, Francis E. M., 25, *Booth-street, Manchester.*
1878	*Beauchamp, The Right Hon. Earl, 13, *Belgrave-square, S.W.*
1875	*Beaufort, William Morris, F.R.A.S., F.R.G.S., &c., 18, *Piccadilly, W.*
1883	Beaumont, Henry *Gordon Villa, The Park, Highgate, N.*
1882	*Beazeley, Michael Wornum, 3, *St. Paul's-road, Thornton Heath, Surrey.*
1883	Beckingham, James Horace, 48, *Percy Park, Tynemouth, Northumberland.*
1872	*Bedford, His Grace, the Duke of, K.G., D.L., *Woburn Abbey, Bedfordshire.*
1884	Bedford, James, *Woodhouse Cliff, Leeds.*
1882	*Beeton, Henry Ramie (*via, Austin Friars, E.C.*); 9, *Maresfield-gardens, Hampstead.*
1884	Begg, Alexander,
1886	Begg, Ferdinand Faithfull, 6, *Drapers-gardens, E.C.*
1880	Bell, Sir Isaac Lowthian, Bart., J.P., F.R.S. *Rounton Grange, Northallerton, York, N.R.*
1884	Bell, James T., *Northcote, Dowanhill, viâ Glasgow.*
1888	Bellew, Thomas Acheson, 65, *Tower Buildings, Liverpool.*
1888	*Benson, G. R. (*Oxenford Hall, Oxford*), 8, *Kensington Court Mansions, W.*
1884	*Bentley, Richard, F.R.G.S., *Upton, Slough, Bucks,*
1884	Berg, Wilhelm, 37, *Mincing-lane, E.C.*

Year of Election.	
1886	Bernard, Henry Fitzgerald, *Rosslara, Ealing, W.*
1874	Bessborough, The Right Hon. The Earl of, *Bessborough, Pilltown, Ireland.*
1881	Besso, Marco, F.I.A., *Compagnia di Assicurazioni Generali, Trieste.*
1875	Bevan, Thomas, *Stone Park, near Dartford, Kent.*
1869	*Beverley, Henry, *United Service Club, Calcutta.*
1879	*Bickford-Smith, William, M.P., J.P., D.L., &c., *Trevarno, Helston, Cornwall.*
1886	Biggs, Thomas Hesketh, (*Comptroller*), *Rangoon, Burmah.*
1888	Billinghurst, Henry F., 41, *Lothbury, E.C.*
1883	Binney, William, 13, *St. Helen's-place, E.C.; Hillfield, Hampstead, N.W.*
1888	Binns, Richard William, F.S.A., *Diglis House, Worcester.*
1884	Birch, Robert W. Peregrine, M. Inst. C.E., 5, *Queen Anne's-gate, Westminster, S.W.*
1883	Birchenough, Henry, M.A., 5, *Friday-street, E.C.*
1886	Bird, Stanley, G., 64, *Maida Vale, N.W.*
1881	Bishop. George, 131, *Powis-street, Woolwich.*
1877	Bishop, George Houlton, M.R.C.S., 11 *and* 12, *Clement's-lane, E.C.*
1883	Blades, R. H., 23, *Abchurch-lane, E.C.*
1883	Blades, William, 23, *Abchurch-lane, E.C.*
1888	Blench, John Urwin, 81, *Dale-street, Liverpool.*
1884	Boileau, John Peter Hamilton, M.D., &c. (*Surgeon-Major*), 134, *Herbert-road, Woolwich.*
1881	Bolitho, Thomas Robins, *Pendrea, near Penzance.*
1887	Bolling, Francis, 2, *Laurence Pountney-hill, E.C.*
1880	Bolton, Joseph Cheney, M.P., *Carbrook, Larbert, Stirlingshire.*
1885	*Bonar, James, M.A., LL.D., *Civil Service Commission, Westminster, S.W.*
1887	Bond, Edward, *Elm Bank, Hampstead, N.W.*
1885	BOOTH, CHARLES, 2, *Talbot-court, Gracechurch-street, E.C.*

Year of Election.	
1885	Bordman, Emanuel Linden, *Victoria House, Trinity-street, S.E.*
1879	Bordman, Thomas Joseph Clarence Linden, LL.D., *Victoria House, Trinity-street, Southwark, S.E.*
1888	Bottomley, George. *Arbourfield House, Derby.*
1871	**Bourne, Stephen,** *Abberley, Wallington, Surrey.*
1886	Bourne, William. A.I.A., 4, *Stone-buildings, Lincoln's-inn, W.C.*
1877	Boutcher, Emanuel, 86. *Hyde Park-gardens, W.*
1885	Bovell, The Hon. Henry Alleyne, LL.B., *Chelston, Barbados, West Indies.*
1876	Bowen, Horace George, *Bank of England, E.C.*
1887	Bowles, Henry Ferryman. M.A., *Myddelton House, Waltham Cross, Herts.*
1879	Bowley, Edwin, F.I.A., *Burnt Ash-hill, Lee, Kent.*
1886	Boyle, Courtenay, C.B., *Board of Trade, Whitehall-gardens, S.W.*
1883	Braby, Frederick, F.C.S., F.G.S., *Bushey Lodge, Teddington.*
1875	Braby, James, J.P., *Maybanks, Rudgwick, Sussex.*
1888	Bramwell, Sir Frederick J., Bart., D.C.L., F.R.S., 5, *Great George-street, Westminster, S.W.*
1886	Bramwell, The Right Hon. Lord, F.R.S., 17, *Cadogan-place, S.W.*
1873	**Brassey, The Right Hon. Lord,** K.C.B. (*Honorary Vice-President*), 4, *Great George-street, S.W.; and* 24, *Park-lane, W.*
1864	*Braye, The Right Hon. Lord, 40, *Grosvenor-street, W.; and Stanford Hall, Rugby.*
1884	Breckon, John Robert, 41, *Fawcett-street, Sunderland.*
1883	Briesemann, Francis, *Whittington-avenue, Leadenhall-street, E.C.*
1883	Brindle, Thomas, *North Bank, Tunbridge Wells.*
1887	Brocklesby, Harry Pearson, F.R.G.S., F.R. Hist. S., "*The Shawe,*" *Ashtead, Surrey.*
1876	Brodhurst, Bernard Edward, F.R.C.S., 20, *Grosvenor-street, Grosvenor-square, W.*
1883	Brooke, C. B., 16, *Leadenhall-street, E.C.*
1874	Broom, Andrew, A.C.A., 2, *De Crespigny-terrace, Denmark-hill, S.E.*

Year of Election.	
1878	Brown, Alexander Hargreaves, M.P., 12, *Grosvenor-gardens, S.W.*
1872	Brown, James Bryce, F.R.G.S., 90, *Cannon-street, E.C.; and Bromley, Kent.*
1875	Browne, Thomas Gillespie C., F.I.A., 11, *Lombard-street, E.C.*
1884	Browne, Willis, F.I.A., *India Office, Westminster, S.W.*
1886	Bruce, Lord Henry Brudenell, M.P., 36, *Eaton-place, S.W.*
1886	*Brunner, John Tomlinson, M.P., *Winnington Old Hall, Northwich, Cheshire.*
1883	Buck, Sir Edward Charles, *Revenue and Agricultural Department, Simla, India.*
1865	Bunce, John Thackray, *Longworth, Priory-road, Edgbaston, Birmingham.*
1884	Burbridge, Samuel,
1880	Burdett, Henry Charles, *The Lodge, Porchester-square, W.*
1873	*Burdett-Coutts, The Right Hon. the Baroness, 1, *Stratton-street, W.; and Holly Lodge, Highgate, N.*
1884	Burdett-Coutts, William, M.P., 1, *Stratton-street, Piccadilly, W.*
1882	Burgess, John,
1885	Burridge, Arthur Francis, F.I.A., 46, *Bath-road, Bedford Park, Chiswick*
1886	Burrows, Abraham, J.P., *Green Hall, Atherton, near Manchester*
1880	Burt, Frederick, F.R.G.S., *Woodstock, Crouch End, N.*
1872	*Burton, The Right Hon. Lord, *Chesterfield House,* *Mayfair, W; and Rangemore, Burton-on-Trent.*
1886	Bush, W. Ernest, F.C.S. *Thornleigh, Sydenham-hill, S.E.*
1883	Bush, William John, 20, *Artillery-lane, Bishopsgate-street, E.C.*
1884	Buxton, Sydney Charles, M.P. 15, *Eaton-place, S.W.*
1887	Byrne, Edward Simpson, F.S.A.A., *The Treasury, Calcutta.*
1888	Byrom, William A., *Savings' Bank, Wigan, Lancashire.*

Year of Election.	
1880	Caine, William Sproston, M.P., 1, *The Terrace, Clapham Common, S.W.*
1857	CAIRD, SIR JAMES, K.C.B., F.R.S. (*Honorary Vice-President and Trustee*), 8, *Queen's-gate-gardens, S.W.; & Cassencary, Creetown, N.B.*
1880	·Caird, Robert Henryson,
1874	Campbell, Sir George, K.C.S.I., M.P., D.C.L., 17, *Southwell-gardens, South Kensington, S.W.*
1877	Campbell, George Lamb, *Market-street, Wigan.*
1879	Campbell-Colquhoun, Rev. John Erskine, *Chartwell, Westerham, Kent.*
1887	Capper, Robert, A I.C.E., F.R.G.S., *Westbrook, Swansea.*
1888	CARBUTT, EDWARD HAMER, M. Inst. M.E., M. Inst. C.E., J.P 19, *Hyde Park-gardens, W.*
1881	Carden, Lionel Edward Gresley, *H.M. Consul, Mexico.*
1872	*Carillon, J. Wilson, F.S.A., F.R.G.S., *The Chimes, Richmond, Surrey.*
1887	Carmichael, Charles H. E., M.A., 96, *Eaton-terrace, Eaton-square, S.W.*
1885	Carmichael, Thomas D. Gibson, *Castlecraig, Dolphinton, N.B.*
1886	Carpenter, Frederick, 14, *Sussex-villas, Kensington, W.*
1876	Carphin, James Rhind, C.A., 14, *Hanover-street, Edinburgh.*
1888	Carr, Ebenezer, 5, *Grocers' Hall-court, Poultry, E.C.*
1888	Carruthers-Wain, William J., *Linden Lodge, Thornton Heath, Surrey.*
1883	Carter, Joseph Robert, 2, *Steeles-road, N.W., and* 14, *King's Arms-yard, E.C.*
1878	*Casley, Reginald Kennedy, M.D., *Northgate-street, Ipswich.*
1885	Casson, William A., 22, *Addison-road, Bedford Park, Chiswick.*
1880	Castle, Robert, 18, *Merton-street, Oxford.*
1883	Cater, J. J., 39, *Lombard-street, E.C.*
1883	Cattarns, Richard, *Enfield House, Grove Park, Lee, S.E.*
1881	Causton, Richard Knight, M.P. 3, *Clanricarde-gardens, W.*
1858	Chadwick, David, *The Poplars, Herne Hill, Dulwich, S.E.*

Year of Election.	
1834	Chadwick, Edwin, C.B. (*Corr. Mem., Inst. of France*), *Park Cottage, East Sheen, Mortlake, S.W.*
1869	CHADWICK, JOHN OLDFIELD, F.R.G.S., 95, *Finsbury-pavement, E.C.*
1884	Chailley, Joseph, 9, *Rue Guy de la Brosse, Paris.*
1888	Challis, William H. *Enfield, Middlesex.*
1880	*Chamberlain, The Right Honourable Joseph, M.P., F.R.S., 40, *Prince's-gardens, S.W.*
1886	Chamberlain, Richard, M.P., *Westbourne-road, Birmingham.*
1886	Chapman, Samuel, 5, *Elm Villas, Loughton.*
1884	Chater, J., *Evelyn Lodge, Comarpore, Asausol, E.I.R., India.*
1851	*Cheshire, Edward, 3, *Vanbrugh Park, Blackheath, S.E.*
1883	Childs, Walter,
1853	Chisholm, David, F.I.A., 9, *Rillbank-terrace, Edinburgh*
1886	*Chisholm, George Goudie, M.A., B.Sc., F.R.G.S., *Oxford House, Dornton-road, Balham, S.W.*
1869	Chubb, Hammond, B.A., *Bickley, Kent.*
1888	Clapham, W. W., 35, *Church-street, Manchester.*
1849	Clark, Gordon Wyatt, *Mickleham Hall, near Dorking, Surrey.*
1886	Clark, H. J., *Port of Spain, Trinidad.*
1856	Clark, Sir John Forbes, Bart., *Tillypronie, Tarland, Aberdeen.*
1888	Clarke, Charles Goddard, *Ingleside, Elm Grove, Peckham, S.E.*
1871	Clarke, Ebenezer, *Grove-road, Walthamstow.*
1882	*Clarke, Ernest, F.L.S., 10, *Addison-road, Bedford Park, Chiswick.*
1877	*Clarke, Henry, L.R.C P., *H M. Prison, Wakefield, Yorks.*
1856	*Clarke, Hyde, 32, *St. George's-square, S.W.*
1869	Cleghorn, John, 3, *Spring-gardens, S.W.*
1850	*Cleveland, His Grace the Duke of, K.G., *Battle Abbey, Sussex.*
1853	Clirehugh, William Palin, F.I.A., 66, *Cornhill, E.C.*

Year of Election	
1888	Clough, Walter Owen, 89, *Gresham-street, E.C.*
1877	Cobb, B. Francis,
1873	Cockle, Captain George, F.R.G.S., 9, *Bolton-gardens, South Kensington, S.W.*
1884	Cockshott, John James, 3, *Tulketh-street, Chapel-street, Southport.*
1887	Cohen, Nathaniel Louis, 31, *Throgmorton-street, E.C.*
1838	Colebrooke, Sir Thomas Edward, Bart., *Athenæum Club, S.W.*
1888	Coleman, Harry, 34, *Golden-square, W.*
1859	Coles, John, F.I.A., 39, *Throgmorton-street, E.C.*
1887	Collet, Sir Mark Wilks, Bart., 2, *Sussex-square, W., and St. Clere, Sevenoaks, Kent.*
1888	Collison, Frederick H., 99, *Cheapside, E.C., and Talfourd-road, Camberwell.*
1883	Collmann, John S., 12, *Tokenhouse-yard, E.C.*
1882	*Collum, Rev. Hugh Robert, M.R.I.A., F.R.C.I., *Vicar of Leigh, near Tunbridge, Kent.*
1867	Colman, Jeremiah James, M.P., *Carrow House, Norwich.*
1878	Colomb, Captain Sir J. C. R., K.C.M.G., M.P., R.M.A., J.P., *Droumquinna, Kenmare, Kerry.*
1884	Colyar, Henry Anselm De, 24, *Palace-gardens-terrace, W.; Athenæum Club, S.W.*
1888	Connell, Arthur Knatchbull, M.A., 20, *Elmtree-road, N.W.*
1886	Coode, Sir John, K.C.M.G., C.E.,
1884	Cook, Edward Samuel, 60, *Queen Victoria-street, E.C.*
1887	Cooke-Taylor, R. Whately, *Frenchwood House, Preston.*
1843	*Copperthwaite, William Charles, *New Malton, Yorkshire.*
1874	Corbett, John, M.P., 20, *Hertford-street, Mayfair, W.*
1883	Corgialegno, M., *George-yard, Lombard-street, E.C.*
1873	Cork, Nathaniel, F.R.G.S., 18, *Birchin-lane, E.C.*
1878	Cornish, William Robert, F.R.C.S., C.I.E. (*Surgeon General*), 8, *Creswell-gardens, The Boltons, S.W.*
1883	Cosens, Frederick William, 7, *Melbury-road, Kensington, W.*

Year of Election.	
1862	Courtney, The Right Hon. Leonard Henry, M.A., M.P., 15, *Cheyne Walk, Chelsea, S.W.*
1882	Cowen, Charles, *Johannesburg, Transvaal, South Africa.*
1885	Craddock, Joseph, *Plymouth House, Merthyr-Tydfil.*
1888	Craggs, John George, C.A., 19*a, Coleman-street, E.C.*
1874	CRAIGIE, MAJOR PATRICK GEORGE (*Secretary*), 6, *Lyndhurst-road, Hampstead, N.W.*
1870	Craik, George Lillie, 29, *Bedford-street, Strand, W.C.*
1878	Crewdson, Ernest, *The Green Hall, Wilmslow, Cheshire.*
1886	Crispin, Edward, 67, *Cornhill, E.C.*
1880	*Crompton-Roberts, Charles Henry, 16, *Belgrave-square, S.W.*
1885	Cropper, James, *Ellergreen, Kendal.*
1888	Crosse, Edmond Francis, *National Provincial Bank of England, Liverpool.*
1883	Cullen, Thomas, F.C.A. 21, *Warwick-street, Regent-street, W.*
1887	Culley, George, 2, *Whitehall-place, S.W.*
1875	Cunningham, David, C.E., *Works' Office, Harbour-chambers, Dundee.*
1883	Cunningham, Rev. William, M.A., 2, *St. Paul's-road, Cambridge.*
1884	Curtis, Charles, Edward, *Deanyers, Alton, Hants.*
1879	Curtis, Alderman Robert Leabon, F.S.I., J.P., 120, *London Wall, E.C.*
1873	Czarnikow, Cæsar, *Effingham-hill, Dorking, Surrey.*

1886	Dale, David, *West Lodge, Darlington.*
1869	Dalyell, The Hon. Sir Robert Anstruther, K.C.I.E., C.S.I., 21, *Onslow-gardens, S.W.*
1888	Dangerfield, Athelstan, A.C.A., 17, *Basinghall-street, E.C.*

Year of Election	
1884	Daniell, Clarmont J., *Langley House, King's Langley, Herts.*
1880	Danvers, Frederick Charles, *India Office, Westminster, S.W.*
1873	Danvers, Sir Juland, K.C S.I., *India Office, Westminster, S.W.*
1886	Darrell, Charles, *Sidcup Kent.*
1869	Davies, James Mair, 75, *West Regent-street, Glasgow.*
1874	Davies, William Henry, 51, *Tregunter-road, West Brompton, S.W.*
1888	Dawson, G. J. Crosbie, M. Inst. C.E., F.G.S., *North Staffordshire Railway, Stoke-upon-Trent.*
1886	Dawson, J Eugène, *Walpole House, Walpole-street, Freetown, Sierra Leone.*
1880	Debenham, Frank, 26, *Upper Hamilton-terrace, St. John's Wood, N.W.*
1885	De Broë, Emile Conrad De Bichin, *Walden Lodge, College Park, Wandsworth-common, S.W.*
1879	*De Ferrieres, The Baron Du Bois, J.P., *Bay's-hill House, Cheltenham.*
1884	De Jouy, J. Henry B., 27, *Rue de l'Université, Paris.*
1883	*De Keyser, Alderman Sir Polydore, *Chatham House, Grove-road, Clapham Park, S.W.*
1877	Deloitte, William Welch, 4, *Lothbury, E.C.*
1886	Denison, William Beckett, 138, *Piccadilly, W.*
1886	Denman, Arthur Lemoine, 110, *Cambridge-gardens, North Kensington, W.*
1873	Dent, Edward, *Fernacres, Fulmer, near Slough, Bucks.*
1887	Dent, George Middlewood, 21, *Sefton-street, Southport.*
1855	*DERBY, THE RIGHT HON. THE EARL OF, K.G., F.R.S., D.C.L. (*Honorary Vice-President*), *St. James's-square, S.W.; Knowsley, Prescot, Lancashire.*
1887	De Ricci, J. H., 50, *Cornwall-gardens, Queen's-gate, S.W.*
1884	Dethridge, J. Frank, *The Hermitage, Ravenscourt-park, W.*
1877	Dever, Henry, 4, *Lothbury, E.C.*
1885	Devonshire, Thomas Harris, 1, *Frederick's-place, Old Jewry, E.C.*
1877	De Worms, The Right Hon. Baron Henry, M.P., F.R.A.S., *Carlton Club, Pall Mall, S.W.*

Year of Election.

1885 Dibley, Captain George,
4, *St. George's-square, S.W.*

1866 *Dilke, The Right Hon Sir Charles Wentworth, Bart., LL.M.,
76, *Sloane-street, S.W.*

1873 Dixon, George, M.P.,
The Dales, Edgbaston, Birmingham.

1881 Dobell, Richard R.,
Quebec, Canada.

1875 Doxsey, Rev. Isaac,
186, *The Grove, Camberwell, S.E.*

1878 Doyle, Patrick, C. E., F.G.S., M.R.A.S.,
Messrs. Apcar and Co's. Collieries, Seetarampore, India.

1875 Dun, John,
Parr's Banking Company Limited, Warrington.

1870 Duncan, James,
9, *Mincing-lane, E.C.*

1886 Dundonald, the Right Hon. the Earl of,
50, *Eaton-place, S.W.*

1884 Dunn, Archibald Joseph,
23, *Applegarth-road, Brook-green, Hammersmith, W.*

1878 *Dunraven, The Right Hon. The Earl of, K.P.,
Kenry House, Putney Vale, S.W.

1885 Dyer, William John,
17, *Montpelier-row, Blackheath, S.E.*

1888 Earnshaw, Jacob,
10, *St. James's-square, Manchester.*

1888 Eckersley, J. C., M.A., F.R.G.S.,
Standish Hall, Wigan; 20, *Davies-street, Berkeley-square.*

1883 EDGEWORTH, PROFESSOR FRANCIS YSIDRO, M.A.,
5, *Mount Vernon, Hampstead, N.W.*

1836 Edmonds, Thomas Rowe, B.A.,
72, *Portsdown-road, Maida-vale, W.*

1869 Edmonds, William,
Annesley House, Southsea.

1880 Egerton of Tatton, The Right Honourable Lord,
7, *St. James's-square, S.W.*

1872 Elliot, Sir George, Bart., M.P.,
Park-street, Park-lane, W.; 22, *Gt. George-street, S.W.*

1885 Elliot, William Henry,
122 *Mansion House-chambers, Queen Victoria-street, E.C.*

1888 Elliott, Henry W.,
Elmfield, Selly Oak, near Birmingham.

1885 ELLIOTT, THOMAS HENRY,
Inland Revenue Office, Somerset House, W.C.

Year of Election.	
1885	Elliott, William, *73, George-street, Edinburgh.*
1877	Ellis, Arthur, 42, *High-street, Highgate, N.*
1873	Emanuel, Lewis, 91, *Gloucester-terrace, Hyde Park, W.*
1877	Emmott, W. T., *Sherton House, Seymour-grove, Manchester.*
1888	Emson, Reginald Embleton, 1, *Gresham-buildings, Basinghall-street, E.C.*
1882	Essex, Benjamin Smily, 48, *Pall Mall, S.W.*
1879	Evans, Henry Jones, J.P., *Brecon Old Bank, Cardiff.*
1888	*Evans, John, *Chuley, Ashburton, South Devon.*
1834	Eversley, The Right Hon. Viscount, D.C.L., LL.D.,
1875	Faraday, Frederick J., 17, *Brazennose-street, Manchester.*
1888	Farlow, Arthur Richard, 4, *King-street, Cheapside, E.C.*
1868	Farrell, John Douglas, *Bank of England, West Branch, Burlington-gardens, W.*
1878	Farren George, J.P., A.M.Inst.C.E., *Carnarvon.*
1878	Farrer, Sir Thomas Henry, Bart., J.P., 27, *Bryanston-square, W.; Abinger Hall, Dorking.*
1876	Fearnside, Henry, M.B., F.R.C.P., *De Vere Mansions West*, 34, *De Vere-gardens, W.*
1882	Fell, Arthur, M.A., 46, *Queen Victoria-street, E C.*
1864	Fellows, Frank Perks, 8, *The Green, Hampstead, N.W.*
1888	Fellows, James I., *Saxon Hall, Palace-court, Kensington Gardens, W.*
1884	Felton, George Frederick, 6, *Church-walks, Llandudno, North Wales.*
1887	Fenton, James J., *Office of the Government Statist, Melbourne, Victoria.*
1885	Ferguson, Ronald Crawfurd Munro, M.P., *Raith, Kirkcaldy, N.B.*
1888	Finckenstadt, Edmund Ernest, 3 *and* 4, *Great Winchester-street, E.C.*
1880	Findlay, George, (*General Manager*), *London and N. Western Railway, Euston Station, N.W.*

Year of Election.	
1880	Finlaison, Alexander John, C.B., F.I.A., 19, *Old Jewry, E.C.*
1884	*Finnemore, Robert Isaac, J.P., F.R.G.S., &c., *Durban, Natal, South Africa*
1888	Fisher, Henry, J.P., *Regina, N.W. Territories, Canada.*
1888	Fisher, Walter Newton, 4, *Waterloo-street, Birmingham.*
1885	*Fitz-Gerald, Major William George, M.A., *United Service Club, Dublin.*
1882	Foley, Patrick James, M.P., *Pearl Ins. Co., Adelaide-place, London Bridge, E.C.*
1886	Ford, Alfred, 67, *Cornhill, E.C.*
1875	Fordham, Edward King, J.P., D.L. *The Bury, Ashwell, Baldock, Herts.*
1841	Fortescue, The Right Honourable Earl, *Castle Hill, South Molton, Devon.*
1888	Forwood, Sir William B., J.P., *Blundell Sands, Liverpool.*
1884	Fosbery, William Thomas Exham, *The Castle-park, Warwick.*
1888	Foster, Harry Seymour, F.R.G.S., *City Carlton Club, St. Swithin's-lane, E.C.*
1885	Foster, John Collie,
1877	*Fowler, Alderman Sir Robert Nicholas, Bart., M.P., *Elm Grove, Corsham, Wilts.*
1868	Fowler, William, 38, *Grosvenor-square, S.W.*
1888	Fox, William Henry, 20, *Great Winchester Street, E.C.*
1878	FOXWELL, PROFESSOR H. SOMERTON, M.A., *St. John's College, Cambridge.*
1888	Frampton, Albert Tom, *Clovelly, Walton-on-Thames, Surrey.*
1879	Francis, George Edward, *Staunton, Coleford, Gloucestershire.*
1887	Frankland, Frederick William, F.I.A. *Govt. Life Ins. Office, Wellington, New Zealand.*
1886	Fream, Professor William, B.Sc., Lond., LL.D., F.L.S., F.G.S., *College of Agriculture, Downton, Salisbury.*
1844	*Freeland, Humphrey William, J.P., *Athenæum Club, S.W.; and Chichester.*
1887	Freeman, T., jun., F.G.S., *St. Augustine's, Florence, Stoke-on-Trent.*
1888	Friedeberg, Henry, 16, *Aldersgate-street, E.C.*
1884	Frith, Walter Halsted, 69, *Lombard-street, E.C.*

Year of Election	
1886	Fuller, George Pargiter, M.P., *Neston-park, Corsham, Wilts.*
1878	Fuller, William Palmer, 50, *Gresham-street, E.C.*

1879	Gairdner, Charles, *Broom, Newton Mearns, Renfrewshire.*
1852	Galsworthy, Sir Edwin Henry, J.P., 18, *Park-crescent, Portland-place, W.*
1873	*Galton, Capt. Sir Douglas, K.C.B., D.C.L., LL.D., F.R.S., 12, *Chester-street, Grosvenor-place, S.W.*
1860	Galton, Francis, F.R.S., F.R.G.S., 42, *Rutland-gate, S W.*
1874	Gannon, James, *Guildhall, E.C.* (*representing the Library Committee of the Corporation of the City of London*).
1887	Garcke, Emile, 21, *Priory-road, Bedford-park, Chiswick.*
1881	GARNETT, FREDERICK BROOKSBANK, C.B., (*Vice-President*), 4, *Argyll-road, Kensington, W.*
1881	Garraway, The Hon. David G., *Castries, St. Lucia, West Indies.*
1879	*Gassiot, John Peter, J.P., *The Culvers, Carshalton, Surrey,*
1883	Gates, Jacob S., 9, *Fenchurch-avenue, E.C.*
1880	*Gates, John Benjamin, jun., A.C.A., 47, *Warwick-street, Regent-street, W.*
1881	*Gatty, William Henry, *Market Harborough, Leicestershire.*
1885	Gibb, George S., *North-Eastern Railway Company, York.*
1872	Gibb, Thomas Eccleston, 16, *Lady Margaret-road, N.W.*
1874	Gibbs, Alban George Henry, 82, *Portland-place, W.*
1871	Gibbs, George Sleight, *Elton House, Darlington.*
1882	Gibbs, Richard, *The Hollies, Weybridge.*
1888	Gibson, Thomas Eli, *High-street, Crewe.*
1888	Gielgud, Henry, 19, *The Avenue, Bedford Park, Chiswick.*
1867	*GIFFEN, ROBERT, LL.D. (*Honorary Vice-President*), 44, *Pembroke-road, Kensington, W.*

Year of Election

1877 Gilbert, William H. Sainsbury,
62, Old Broad-street, E.C.

1878 *Glanville, Silvanus Goring,
Lostwithiel, Rushey Green, Catford, S.E.

1860 Glover, John, J.P.,
88, *Bishopsgate-street Within, E.C.*

1888 Goad, Charles E., M. Am. Soc. C.E., M. Can. Soc. C.E.,
53, *New Broad-street, E.C., and Montreal, Canada.*

1877 Goddard, Frederick Robertson,
19, *Victoria-square, Newcastle-on-Tyne.*

1884 Gonner, Professor Edward C.K., M.A.,
University College, Liverpool.

1877 Good, Alfred,
57, *Moorgate-st., E.C.; Downe Lodge, Beckenham, Kent.*

1886 Goodrich, Harry St. Aubyn (*Calcutta*),
c/o Messrs. H. S. King and Co., 65, *Cornhill, E.C.*

1885 Goodsall, David Henry, F.R.C.S.,
17, *Devonshire-place, W.*

1868 GOSCHEN, THE RIGHT HON. GEORGE JOACHIM, M.P.,
(*Honorary Vice-President*),
69, *Portland-place, W., and Seacox-heath, Hawkhurst.*

1855 *Gosset, John Jackson,
Thames Ditton, Surrey.

1885 Goulding, William Purdham, F.S.I.,
41, *Moorgate-street, E.C.; and* 18, *Mercers-road, N.*

1887 Gover, Frederic Field,
Casino House, Herne Hill, S.E.

1853 Gover, William Sutton, F.I.A.,
4, *Queen-street-place, Southwark Bridge, E.C.*

1885 Grant, Thomas Rennie,
10, *Harrington-gardens, Kensington, S.W.*

1875 Granville, Joseph Mortimer, M.D., F.G.S.,
14, *Hanover-square, W.*

1887 Graves, The Rev. Michael, B.A.,
Sir W. Borlase's School, Great Marlow.

1847 Gray, Thomas,
34, *Fenchurch-street, E.C.*

1888 Green, Joseph S.,
18, *King Street, Warrington.*

1886 Green, Oswald R.,
7, *Finsbury-square, E.C.*

1881 Greening, William H.,
Oakfield Cottage, Balsall Heath, Birmingham.

1887 Gribble, George J.,
25, *Hans-place, S.W.*

1883 Griffin, Josiah,
Vanbrugh Park, Blackheath, S.E.

1868 Griffith, Edward Clifton,
1, *Waterloo-place, S.W.*

Year of Election.	
1884	Griffith, T. Risely, 5, *Maze-hill*, *Greenwich*, *S.E.*
1883	Grimshaw, Thomas Wrigley, M.D., M.A., (Registrar-General of Ireland), *Priorsland*, *Carrickmines*, *Co. Dublin.*
1886	Grimston, The Right Hon. Viscount, M.P., *Cell Barnes*, *St Albans.*
1888	Grosvenor. The Hon. Norman de l'Aigle, 58, *Green-st.*, *Grosvenor-sq.*; *Moor Park*, *Rickmansworth.*
1863	Gunther, Charles, 9, *Fenchurch-avenue*, *E.C.*
1875	Gunn, Arthur, 31, *Gloucester-road*, *Gloucester-gate*, *Regent's Park*, *N.W.*
1878	Guthrie, Charles, F.C.A. *London Chartered Bank of Australia*, *Melbourne*, *Victoria.*
1885	Guthrie, Edwin (*President*, *Manchester Statistical Society*), *Victoria Park*, *Manchester.*
1887	Guyot, Yves, Deputé, 95, *Rue de Seine*, *Paris.*
1888	Gwilliam. Rev. S. Thorne, B A., F.R.G.S., *Whitchurch* (*Oxon.*), *Reading.*
1880	*Gwynne, James Eglinton A., J.P., F.S.A., 97, *Harley-st.*, *W.*; *Folkington Manor*, *Polegate*, *Sussex.*
1887	Gwyther, John Howard, *Hatton-court*, *Threadneedle-street*, *E.C.*
1884	Haas, Hendrik Christiaan, 32, *Fenchurch-street*, *E.C.*
1888	Haddon, John, 3, *Bouverie-street*, *Fleet-street*, *E.C.*
1884	Hadley, Joseph, 5, *Argyll-place*, *Regent-street*, *W.*
1883	Hadrill, Henry John, 1, *Foley-avenue*, *East Heath*, *Hampstead*, *N.W.*
1873	*Haggard, Frederick T., 1, *Broadwater Down*, *Tunbridge Wells.*
1884	Hague, John, *King-street*, *Toronto*, *Canada.*
1887	Haldeman, Donald Carmichael, *Claremont*, *Gypsy Hill*, *S.E.*
1883	Hall, Sir John, K.C.M.G., *Hororata*, *Canterbury*, *New Zealand.*
1878	Hallett, Thomas George Palmer, M.A., *Claverton Lodge*, *Bath.*

Year of Election.

1887 Hamilton, Edward W., C.B.,
The Treasury, Whitehall, S.W.

1873 Hamilton, The Right Hon. Lord George Francis, M.P.,
17, *Montagu-street, Portman-square, W.*

1883 Hamilton, James Thomas,
23, *High-street, Southampton.*

1882 Hamilton, John James,
The Grange, Chislehurst.

1879 **HAMILTON, ROWLAND** (*Vice-President*),
Oriental Club, Hanover-square, W.

1887 Hamilton, Thomas, J.P.,
46, *Parliament-hill-road, Hampstead, N.W.*

1884 *Hammersley, Hugh Greenwood,
Sun House, 6, *Chelsea Embankment, S.W.*

1888 Hammond, Robert,
117, *Bishopsgate-street Within, E.C.*

1873 Hanbury, Robert William, M.P.,
Ilam Hall, Ashbourne, Derbyshire.

1885 *Hancock, Charles, M.A., Oxon.,
2, *Cloisters, Temple, E.C.; and Reform Club, S.W.*

1869 Hancock, William,
35, *Cornhill, E.C.*

1875 Hankey, Ernest Alers,
Elmhurst, Bickley-park, Kent.

1879 Hankey, Thomson,
59, *Portland-place, W.*

1876 Hansard, Luke,
68, *Lombard-street, E.C.*

1883 Hansell, Robert B.,
Moor Oaks-road, Broomhill, Sheffield.

1885 Harbhamji, Prince, of Morbi,
Rajcoomar College, Rajkot, Kathiawar, Bombay, India.

1871 *Harcourt, Right Hon. Sir William Vernon, Q.C., M.P., F.R.S.
Reform Club, S.W.

1886 *Hardcastle, Basil William,
Beechenden, Hampstead, N.W.

1886 Hardcastle, E. J.,
Oriental Club, Hanover-square, W.

1877 Harding, Colonel Charles, F.R.G.S.,
10, *St. Swithin's-lane, E.C.*

1883 Harding G. P.,

1884 Hardy, George Francis, F.I.A.,
5, *Whitehall, S.W.*

1883 Hardy, William Henry, F.C.A.,
5, *Great Winchester-street, E.C.*

1868 Harris, David,
Caroline Park, Granton, Edinburgh.

1887 Harris, William A., F.R.S.S.A.,
Phœnix Chambers, Exchange, Liverpool.

Year of Election.

1882 Harris, William James,
73, *Albert Hall Mansions, Kensington, W.*

1887 Harrold, Leonard F., F.R.G.S.,
29, *Great St. Helens, E.C.*

1884 Hart, James,
19, *Fenchurch-street, E.C.*

1884 Hartel, Adolph,
22, *Arundel-square, Barnsbury-park, N*

1870 Hartley, Fountain John,
Gloucester House, 97, *Cazenove-road, Stamford-hill, N.*

1881 Harvey, Alfred Spalding, B.A.,
67, *Lombard-street, E.C.*

1884 Harvey, Thomas Morgan,
1, *Gresham Buildings, Basinghall-street, E.C.*

1876 Hawkins, Alfred Templeton, F.R.G.S.,
22, *Budge-row, Cannon-street, E.C.*

1879 Hawksley, Thomas, C.E., F.R.S., &c.,
30, *Great George-street, Westminster, S.W.*

1880 Hazell, Walter,
15, *Russell-square, W.*

1887 *Heap, Ralph, jun.,
1, *Brick-court, Temple, E.C.*

1884 Hedley, Robert Wilkin,
31*a*, *Colmore-row, Birmingham.*

1870 Hefford, George V.,
Rugby.

1883 Heilgers, Robert Phillip,
22, *Great St. Helens, E.C.*

1865 Hendriks, Augustus, F.I.A.,
7, *Cornhill, E.C.*

1855 *Hendriks, Frederick, F.I.A.,
1, *King William-street, E.C.*

1886 Henshaw, Richard S.
31, *Bedford-street, Strand, W.C.*

1877 *Herbage, William,
London & South Western Bank, 7, *Fenchurch-street, E.C.*

1888 Heriot, George,
1, *Whittington House, Leadenhall-street, E.C.*

1881 Hewat, Archibald, F.I.A., F.F.A.,
22, *George-street, Edinburgh.*

1834 ***Heywood, James**, M.A., F.R.S., F.G.S
(*Honorary Vice-President and Trustee*),
26, *Palace-gardens, Kensington, W.; Athenæum Club, S.W.*

1886 Hibbert, H. F.,
Park-road, Chorley, Lancashire.

1869 Hickson, Joseph, J.P. (*General Manager*),
Grand Trunk Railway, Montreal, Canada.

1888 Hill, Alfred, J.P.,
62, *Hagley-road, Birmingham.*

Year of Election	
1878	*Hill, Frederick Morley, 22, *Richmond-road, Barnsbury, N.*
1878	Hillingdon, The Right Hon. Lord, *Camelford House Park-lane, W.*
1884	Hoare, Alfred, 37, *Fleet-street, E.C.*
1879	Hoare, H. N. Hamilton, 37, *Fleet-street, E.C.*
1870	*Hoare, Henry, 22, *Bryanston-square, W.*
1888	Hollams, John, 52, *Eaton-square, S.W.*
1888	Hollington, Alfred J., *Aldgate, E.C.*
1884	Hollond, John Robert, 1, *Upper Berkeley-street, Portman-square, W.*
1887	Honeyman, Archibald Pearson, *Old Bank House, Kirkcaldy, N.B.*
1879	Hooper, George Norgate, *Elmleigh, Hayne-road, Beckenham, Kent.*
1878	Hooper, Wynnard, 13, *Sumner-place, Onslow-square, S.W.*
1887	Hopkins, John, *The Grange, Bickley, Kent.*
1888	Howard, James, J.P., D.L., *Clapham Park, Bedfordshire.*
1888	Howell, Edward J. *Woodthorpe, Beulah Hill, Upper Norwood, S.E.*
1883	Howell, Francis Buller, 2, *Middle Temple-lane, E.C.*
1883	Howell, George, M.P., *Hampden House, Ellingham-road, Shepherd's Bush, W.*
1885	Howell, Jenkin, *Aberdare, South Wales.*
1864	Hudson, Thomas, 17, *Hilde-road, Brixton, S.W.*
1878	Hughes, John, 3, *West-street, Finsbury-circus, E.C.*
1872	Humphreys, George, M.A., F.I.A., 79, *Pall Mall, S.W.*
1874	HUMPHREYS, NOEL ALGERNON, *General Register Office, Somerset House, W.C.*
1873	Hunt, Sir Henry Arthur, C.B., 45, *Parliament-street, S.W.*
1883	Hunt, Richard Aldington, A.I.A., *Moor-street, Birmingham.*
1888	Hunter, George Burton, *Wallsend-on-Tyne.*
1885	Hunter, William Alfred, LL.D., M.P., 2, *Brick-court, Temple, E.C.*

Year of Election

1857 Hurst, George,
King's Brook House, St. Mary's, Bedford.

1888 Hyde, Clarendon G., B.L.,
4, *Pump-court, Temple, E.C.*

1887 Hyde, Henry Barry,
5, *Eaton-rise, Ealing, W.*

1869 Ingall, Samuel, F.R.G.S., F.I.A.,
Kent-end, Forest-hill, Kent, S.E.

1874 *Ingall, William Thomas Fitzherbert Mackenzie,
6, *Drapers'-gardens, E.C.*

1886 Ingham, Edward,

1869 *Inglis, Cornelius, M.D.,
Athenæum Club, S.W.

1888 *Ionides, Alexander A.,
1, *Holland Park, W.*

1888 Ironmonger, Thomas, J.P.,
Hillside, Graiseley, Wolverhampton.

1887 Irvine, Somerset William D'Arcy,
Govt. Life Ins. Office, Wellington, New Zealand.

1839 Irving, John,
94, *Eaton-place, S.W.*

1864 *Ivey, George Pearse,
South Villa, Bexley-heath, Kent.

1885 Jackson, Henry,
158, *The Common, Peckham Rye, S.E.*

1880 *Jackson, William Lavies, M.P.,
Chapelallerton, Leeds.

1884 Jacoby, James Alfred, M.P.,
Stoney-street, Nottingham.

1879 Jamieson, George Auldjo,
37, *Drumsheugh-gardens, Edinburgh.*

1872 JANSON, FREDERICK HALSEY, F.L.S.,
41, *Finsbury-circus, E.C.;* 60, *Westbourne-terrace, W.*

1878 JEANS, J. STEPHEN,
Victoria Mansions, Victoria-street, Westminster, S.W.

1881 *Jersey, The Right Hon. the Earl of,
3, *Great Stanhope-street, W.*

Year of Election.	
1881	Johnson, Edwin Eltham, 110, *Cannon-street, E.C.*
1871	Johnson, Edmund, 1, *Castle-street, Holborn, E.C.*
1888	Johnson, John Grove, 23, *Cross-street, Finsbury, E.C.*
1880	Johnson, Walter, *Rounton Grange, Northallerton.*
1872	Johnston, Francis John, *Lamas, Chislehurst.*
1881	Johnston, Rev. James, *Gleneve, Highland-road, Upper Norwood, S.E.*
1883	Johnston, Thomas, *Broomsleigh Park, Seal, Sevenoaks.*
1878	Johnstone, Edward, 14, *Abbeville-road, Cavendish-road, Clapham, S.W.*
1884	*Jones, Edwin, J. P., 141, *Cannon-street, E.C.*
1878	Jones, Henry R. Bence, *Board of Trade, Whitehall-gardens, S.W.*
1874	Jones, Herbert, 15, *Montpelier-row, Blackheath, S.E.*
1888	Jones, J. Mortimer, 112, *Highbury New Park, N.*
1887	Jones, John Walter, 58, *Cheapside, E.C.*,
1887	Jones, Lewis Davies, 14, *Pierremont-crescent, Darlington.*
1880	Jones, Robert Hesketh, *St. Augustine's, Hayne-road, Beckenham, Kent.*
1877	Jones, Theodore Brooke, *Georgeville, Harrogate, Yorks.*
1888	*Jordan, William L., 25, *Jermyn-street, S.W.*
1883	Joseph, Samuel Solomon, 29, *Hyde Park-gardens, W.*
1884	Josolyne, John Augustus, 28, *King-street, Cheapside, E.C.*
1858	Jourdan, Francis, *Avenue House, Hampstead, N.W.*
1873	Kay, Duncan James, 60, *Queen's-gate, S.W.*
1877	Kealy, James William, 26, *Moorgate-street, E.C.*
1885	Keen, William Brock, 15, *King-street, Cheapside, E.C.*

Year of Election.	
1874	Kelly, Charles, M.D., F.R.C.P., *Worthing, Sussex.*
1884	Kelly, Edward Festus, 51, *Great Queen-street, Lincoln's-inn-fields, W.C.*
1867	Kelly, Edward Robert, A.M., 51, *Great Queen-street, Lincoln's-inn-fields, W.C.*
1883	Keltie, John Scott, 52, *Cromwell-avenue, Highgate, N.*
1884	Kemp, John, 46, *Cannon-street, E.C.*
1884	***Kennedy, Charles Malcolm**, C.B., *Foreign Office, S.W.*
1886	Kennedy, John Gordon, *H.B.M. Embassy, Rome, Italy.*
1878	Kennedy, J. Murray, *New University Club, St. James's-street, S.W.*
1878	Kennedy, Thomas, F.C.A. 11, *Old Jewry-chambers, E.C.*
1881	*Kennett-Barrington, Sir V. Hunter, M.A., LL.M., Cantab., *Manor House, Dorchester-on-Thames, Wallingford.*
1883	*Keynes, John Neville, M.A., B.Sc. 6, *Harvey-road, Cambridge.*
1887	Kidd, Benjamin, *Inland Revenue Office, Somerset House, W.C.*
1884	Kimber, Henry, M.P., 79, *Lombard-street, E.C.*
1852	Kimberley, The Right Honourable the Earl of, M.A., P.C., 35, *Lowndes-square, S.W.*
1883	*King, Bolton, B.A., 10, *Upper Berkeley-street, W.*
1888	King, John, 59, *St. Thomas's-road, Chorley, Lancashire.*
1884	Kirby, Horace Woodburn, F.C.A., 19, *Birchin-lane, E.C.*
1879	Kirkwood, Anderson, LL.D., *Melville-terrace, Stirling, N.B.*
1888	*Kitson. Sir James, Bart., J.P., *Gledhow Hall, Leeds.*
1878	*Kusaka, Yoshio, *First National Bank, Tokio, Japan.*
1869	Kyshe, John Benjamin, 5, *Princes-terrace, Princes-square, Bayswater, W.*

Year of Election.	
1874	Lang, George Murray, R.N., 18, *Cheyne-walk, Chelsea, S.W.*
1881	Langton, Henry Currer, *Docklands, Ingatestone, Essex.*
1883	Last, William Harrison, *Inland Revenue, Somerset House, W.C.*
1885	Latham, Baldwin, M. Inst. C.E., 7, *Westminster-chambers, S.W.*
1877	Laurance, Henry, 1*a*, *Old Bond-street, W.*
1874	LAWES, SIR JOHN BENNETT, BART., LL.D., F.R.S., F.C.S., *Rothamsted-park, St. Albans.*
1878	Lawrence, Alexander Macclesfield, *West Brae, Stonebridge-park, Willesden, N.W.*
1873	Lawrie, James, F.R.G.S., 63, *Old Broad-street, E.C.*
1883	Lawson, Charles Henry, *Green's End, Woolwich.*
1873	LAWSON, ROBERT, LL.D. (*Inspector-General of Army Hospitals, Vice-President*), 20, *Lansdowne-rd., Notting-hl., W.*
1873	Lea, Thomas, M.P., 14, *Elvaston-place, Queen's-gate, S.W.*
1883	*Leadam, Isaac Saunders, M.A., 117, *St. George's-square, S.W.*
1886	Leathes, Stanley M., *Trinity College, Cambridge.*
1883	Lee, Henry, *Reform Club, S.W.*
1886	*Lee, Sir Joseph C., *Mosley-street, Manchester.*
1884	Lee, William, *Fairlands, Worplesdon, Guildford, Surrey.*
1879	*Leete, Joseph, 36, *St. Mary-at-hill, E.C., & Eversden, S. Norwood Park.*
1877	LEFEVRE, THE RIGHT HON. GEORGE SHAW, M.P., M.A., J.P. (*Honorary Vice-President*), 18, *Bryanston-square, W.*
1877	*Leggatt, Daniel, LL.D., 5, *Raymond-buildings, Gray's-inn, W.C.*
1886	Leighton, Sir Baldwyn, Bart., *Loton-park, Shrewsbury.*
1880	Leighton, Stanley, M.P., *Sweeney Hall, Oswestry, Salop.*
1887	Leitch, Alexander, 17, *King William-street, E.C.*
1888	*Le Poer Trench, Col. The Hon. W., R.E., J.P., 3, *Hyde Park-gardens, W.*
1887	*Le Roy-Lewis, Herman, B.A. (*Trinity College, Cambridge*), *Westbury House, Petersfield, Hants.*
1885	Lever, Ellis, *Culcheth Hall, Bowdon, Cheshire.*

Year of Election.
1862 Lewis, Robert,
1, *Bartholomew-lane, E.C.*
1888 *Liberty, A. Lasenby,
13, *Cornwall-terrace, Regent's-park, N.W.*
1877 Ligertwood, Thomas, M.D., F.R.C.S.,
Royal Hospital, Chelsea, S.W.
1884 *Lines, William Edward,
c/o R. S. Lines, Noel House, Hertford.
1878 Lloyd, Thomas,
13, *Angel-court. Throgmorton-street, E.C.*
1879 Lloyd, Wilson, F.R.G.S.,
Myvod House, Wood-green, Wednesbury.
1888 Loch, Charles S., B.A.,
Hedge Row Cottage, Queen Anne's-gardens, Bedford-park.
1882 *LONGSTAFF, GEORGE BLUNDELL, M.A., M.B.,
Southfield Grange, West Hill-road, Wandsworth, S.W.
1888 Lord, John,
54, *Springfield-road, South Hampstead, N.W.*
1876 *Lornie, John Guthrie, J.P.,
Rosemount, Kirkcaldy (of Birnam and Pitcastle), N.B.
1834 Lovelace, The Right Honourable the Earl of, F.R.S.,
East Horsley Park, Ripley, Surrey.
1888 Lovelock, Henry,
3, *Blomfield-street, London-wall, E.C.*
1886 *Low, Malcolm, M.P.,
22, *Roland-gardens, S.W.*
1865 LUBBOCK, SIR JOHN, BART., M.P., F.R.S. (*Trustee*),
High Elms, Beckenham, Kent.
1882 Lubbock, Nevile,
65, *Earl's Court-square, S.W.*
1878 Lucas, Sir Thomas, Bart., J.P.,
37, *Great George-street, Westminster, S.W.*
1885 Luckie, David Mitchell, J.P.,
Wellington, New Zealand.

1885 Mabbs, The Rev. Goodeve,
73, *Godolphin-road, Shepherd's Bush, W.*
1875 *Mabson, Richard Rous,
20, *Bucklersbury, E.C.*
1873 *Macandrew, William, J.P.,
Westwood, near Colchester.

Year of Election.	
1873	McArthur, Alexander, M.P.. *Raleigh Hall, Brixton, S.W.*
1883	McCabe, Hugh B.,
1884	McCabe, William, LL.B , F.I.A., 17, *Clarence-square, Toronto, Canada.*
1888	McCankie, James, 34, *St. Andrew's-square, Edinburgh.*
1867	M'Clean, Frank, *Rusthall House, Tunbridge Wells.*
1873	McDermott, Edward, *Hill Side, Grove-park, Camberwell, S.E.*
1887	Macdonald, Andrew J., 40, *Threadneedle-street, E.C.*
1872	Macdonell, John, 4. *Elm-court, Temple, E.C.*
1873	*McEwen, Laurence T., *c/o. R. A. McLean,* 1, *Queen Victoria-street, E.C.*
1886	*Mackenzie, Colin, F.R.G.S.,
1878	McKewan, William, 21, *Lombard-street, E.C.*
1876	*McLean, Robert Allan, F.R.G.S., 1, *Queen Victoria-street. E.C.*
1863	*Maclure, John William, M.P., J.P., &c., *Carlton Club; The Home, Whalley Range, Manchester*
1887	Macmillan, Angus, M.D., *The Elms, Hull.*
1887	McNaught, Robert, 62, *Royal-avenue, Belfast.*
1888	McNiel, Henry 5, *Cross-street, Manchester.*
1875	Macpherson, Hugh Martin, F.R.C.S. (*Inspector-General*), 14, *St. James's-square, S.W.*
1887	Macpherson, Walter Charles Gordon, *St. George's Club, Hanover-square, W.*
1883	Macqueen, Robert Davidson Barkly, 20, *Addison-gardens North, W.*
1882	McRosty, Alexander, 13, *King's Arms-yard, E.C.; West Bank, Esher.*
1873	Magheramorne, The Right Hon. Baron, 17, *Grosvenor-gardens, S.W.*
1887	Makower, Maurice, 11, *Randolph-crescent, Maida Vale, W.*
1887	Malleson, Frank R., *Dixton Manor House, Winchcombe, Cheltenham.*
1883	*Mandlik, The Hon. Rao Saheb Vishvanath Narayan, C.S.I., *The Hermitage, Khamballa Hill, Bombay.*
1887	Mann, James Saumarez, M.A., *Trinity College, Oxford.*

Year of Election.	
1887	Mann, W. E., 84, *Fore-street, E.C.*
1884	*Manson, Frederick William, *Wellfield, Muswell Hill, N.*
1888	Manuel, James, 17, *Goldhurst-road, S. Hampstead, N.W.*
1877	*Maple, John Blundell, M.P., 8, *Clarence-terrace, Regent's-park, N.W.*
1875	Marsh, Alfred, 85, *Gracechurch-street, E.C.*
1880	*Marshall, Professor Alfred, *Balliol Croft, Madingley-road, Cambridge.*
1887	Marshall, W. Bayley, M. Inst. C.E., M.Inst. M.E., 15, *Augustus-road, Edgbaston, Birmingham.*
1887	Martin, James, 4, *King-street, Cheapside, E.C.*
1874	*MARTIN, JOHN BIDDULPH, M.A., F.Z.S. (*Foreign Secretary*), 17, *Hyde-park-gate, S.W.*
1877	Martin, Josiah, F.I.A.,
1872	*MARTIN, RICHARD BIDDULPH, M.A. (*Treasurer*), 68, *Lombard-street, E.C., and Chislehurst.*
1876	*Martin, Thomas Jaques, 84, *Collins-street West, Melbourne, Victoria.*
1879	Martin, Waldyve Alex. Hamilton, *The Upper Hall, Ledbury, Herefordshire.*
1884	Mason, William Arthur, 31*a*, *Colmore-row, Birmingham.*
1875	*Mathers, John Shackleton, *Hanover House, Leeds, Yorkshire.*
1883	Mathieson, Frederic Coxhead, *Beechworth, Hampstead, N.W.*
1874	May, Frank, *Bank of England, Threadneedle-street, E.C.*
1882	Medhurst, John Thomas, 77, *East India Dock-road, Poplar, E.*
1883	*Medley, George Webb, 21, *Park-street, Park-lane, W.*
1853	*Meikle, James, F.I.A., 6, *St. Andrew's-square, Edinburgh.*
1880	Menzies, R. Stewart, B.A., M.P., J.P. *Hallyburton, Coupar-Angus, N.B.*
1884	Merton, Zachary, 14*a*, *Manchester-square, W.*
1887	Meudell, George D., F.S.A., 46, *Elizabeth-street, Melbourne, Victoria.*
1881	Meyer, Robert Alexander, *Whitehall Club, Parliament-street, S.W*
1875	Mildmay, Henry Bingham, J.P., 8, *Bishopsgate-street Within, E.C.*

Year of Election.

1873 McArthur, Alexander, M.P.,
Raleigh Hall, Brixton, S.W.

1883 McCabe, Hugh B.,

1884 McCabe, William, LL.B., F.I.A.,
[illegible] *Toronto, Canada.*

1888 McCance, James,
34, *St. Andrew's-square, Edinburgh.*

1867 M'Clean, Frank,
Rusthall House, Tunbridge Wells.

1873 McDermott, Edward,
Hill Side, Grove-park, Camberwell, S.E.

1887 Macdonald, Andrew J.,
40, *Threadneedle-street, E.C.*

1872 Macdowell, John,
4, *Elm-court, Temple, E.C.*

1873 *McEwen, Laurence T.,
c/o *R. A. McLean,* 1, *Queen Victoria-street, E.C.*

1886 *Mackenzie, Colin, F.R.G.S.,

1878 McKewan, William,
21, *Lombard-street, E.C.*

1876 *McLean, Robert Allan, F.R.G.S.,
1, *Queen Victoria-street, E.C.*

1863 *Maclure, John William, M.P., J.P., &c.,
Carlton Club; The Home, Whalley Range, Manchester

1887 Macmillan, Angus, M.D.,
The Elms, Hull.

1887 McNaught, Robert,
62, *Royal-avenue, Belfast.*

1888 McNiel, Henry
5, *Cross-street, Manchester.*

1875 Macpherson, Hugh Martin, F.R.C.S. (*Inspector-General*),
14, *St. James's-square, S.W.*

1887 Macpherson, Walter Charles Gordon,
St. George's Club, Hanover-square, W.

1888 Macqueen, Robert Davidson Barkly,
20, *Addison-gardens North, W.*

1882 McRosty, Alexander,
18, *King's Arms-yard,*

1878 Magheramorne, The Right
17, *Grosvenor-*

1887 Makower, Maurice
11, *Rando*

1887 Malleson, Fra
Dixto

1888 *Mandlik,
T

1887 Mann,

Year of Election.

1887 Mann, W. E.,
84, *Fore-street, E.C.*

1884 *Manson, Frederick William,
Wellfield, Muswell Hill, N.

1888 Manuel, James,
17, *Goldhurst-road, S. Hampstead, N.W.*

1877 *Maple, John Blundell, M.P.,
8, *Clarence-terrace, Regent's-park, N.W.*

1875 Marsh, Alfred,
85, *Gracechurch-street, E.C.*

1880 *Marshall, Professor Alfred,
Balliol Croft, Madingley-road, Cambridge.

1887 Marshall, W. Bayley, M. Inst. C.E., M.Inst. M.E.,
15, *Augustus-road, Edgbaston, Birmingham.*

1887 Martin, James,
4, *King-street, Cheapside, E.C.*

1874 *MARTIN, JOHN BIDDULPH, M.A., F.Z.S. (*Foreign Secretary*).
17, *Hyde-park-gate, S.W.*

1877 Martin, Josiah, F.I.A.,

1872 *MARTIN, RICHARD BIDDULPH, M.A. (*Treasurer*),
68, *Lombard-street, E.C., and Chislehurst.*

1876 *Martin, Thomas Jaques,
84, *Collins-street West, Melbourne, Victoria.*

1879 Martin, Waldyve Alex. Hamilton,
The Upper Hall, Ledbury, Herefordshire.

1884 Mason, William Arthur,
31*a*, *Colmore-row, Birmingham.*

1875 *Mathers, John Shackleton,
Hanover House, Leeds, Yorkshire.

1883 Mathieson, Frederic Coxhead,
Beechworth, Hampstead, N.W.

1874 May, Frank,
Bank of England, Threadneedle-street, E.C.

18[illegible] Medhu[illegible] John Thomas,
[illegible] *India Dock-road, Poplar, E.*

[illegible] Webb,
[illegible] *street, Park-lane, W.*

[illegible] F.I.A.,
[illegible] *ndrew's-square, Edinburgh.*

[illegible] Stewart, B.A., M.P., [illegible]
[illegible] *rton, C*[illegible] *Angus,* [illegible]

[illegible]

Year of Election.	
1873	Millar, William Henry, *Cleveland Lodge, New Park-road, Brixton-hill, S.W.*
1877	Miller, Robert Ferguson, *Ramsden-square, Barrow-in-Furness.*
1879	Miller, William, 67, *Queen Victoria-street, E.C.*
1888	Mills, Sir Charles, K.C.M.G., C.B., 7, *Albert Mansions, Victoria-street, S.W.*
1882	Milnes, Alfred, M.A., 22*a*, *Goldhurst-terrace, S. Hampstead, N.W.*
1884	Milnes, Charles S., 155, *Fenchurch-street, E.C.*
1874	*Mocatta, Frederick D., F.R.G.S., 9, *Connaught-place, W.*
1878	Moffat, Robert J., *Cherry Hinton Hall, near Cambridge.*
1888	*Molloy, William R. J., M.R.I.A. (*National Education Board*), 17, *Brookfield-terrace, Donnybrook, Dublin.*
1879	Moore, Alfred, C.E., *Queen's Chambers*, 2, *Ridgfield, Manchester.*
1887	Moore, Arthur Chisholm, 23, *Essex-street, Strand, W.C.*
1874	Moore, Charles Rendall, 46, *Brockley-road, Lewisham-road, S.E.*
1877	Moore, Edward, 3, *Crosby-square, E.C.*
1885	Moore, Harold Edward, 1, *Essex-street, Strand, W.C.*
1878	*Moore, John Byers Gunning, *Loymount, Cookstown, Ireland.*
1888	Moore, William Richard Caldwell, 136, *Palmerston-buildings, Old Broad-street, E.C.*
1880	More, Robert Jasper, M.P., *Linley Hall, Bishopscastle, Salop.*
1883	Morgan, James Henry, 126, *Narrow-street, Limehouse, E.*
1872	Morgan, Octavius Vaughan, M.P., J.P., 13, *The Boltons, South Kensington, S.W.*
1881	Morison, Arthur Duff, *Constitutional Club, Northumberland-avenue, S.W.*
1874	*Morris, James, M.D., F.R.C.S., 13, *Somers-place, Hyde-park-square, W.*
1888	Morris, John, 13, *Park-street, Grosvenor-square, W.*; 6, *Old Jewry, E.C.*
1884	Morris, W. Targett, *Langford House, Buckhurst-hill, Essex.*
1877	Mort, William, 1, *Stanley-crescent, Notting-hill, W.*
1873	Morton, James, 30, *Forsyth-street, Greenock, N.B.*

Year of Election.	
1885	*Mosley, Tonman, *Bangors, Iver, Uxbridge.*
1847	*Mouat, Frederic John, M.D., LL.D., 12, *Durham-villas, Kensington, W.*
1886	Mowbray, Robert Gray Cornish, M.P., 19, *Down-street, Piccadilly, W.*
1886	Moxon, Thomas B., *Manchester and County Bank, Limited, Manchester.*
1883	Muirhead, Henry James, *Oakwood, Farquhar-road, Upper Norwood, S.E.*
1880	Mulhall, Michael George, 19, *Albion-street, Hyde Park, W.*
1878	*Mundella, The Right Hon. Anthony John, M.P., F.R.S., 16, *Elvaston-place, Queens-gate, S.W.*
1878	Murray, Adam, 104, *King-street, Manchester.*
1879	Murray, James Charles, *Calcutta.*

1887	Nacian, J. J., *Ministry of Finance, Bucharest, Roumania.*
1888	Narraway, W. F., *Crooms Hill House, Greenwich, S.E.*
1865	Nasmith, David, 4, *Brick-court, Temple, E.C.*
1878	*Nathan, Henry, *Dashwood House, New Broad-street, E.C.*
1854	Neild, Alfred, *Mayfield Print Works, Manchester.*
1869	NEISON, FRANCIS GUSTAVUS PAULUS, F.I.A., 93, *Adelaide-road, South Hampstead, N.W.*
1885	Nelson, Edward Montague, J.P., *Hanger Hill House, Ealing, W.*
1877	Nevill, Charles Henry, 11, *Queen Victoria-street, E.C.*
1862	Newbatt, Benjamin, F.I.A., F.R.G.S., 15, *St. James's-square, S.W.*
1888	Newgass, Benjamin, 54, *Prince's-gate, S.W.*
1883	Newmarch, Mrs. Elizabeth, *Brook House, Addlestone, Surrey.*

Year of Election.	
1888	Newton, Sheriff Alfred J., *Northwood, Chislehurst, Kent.*
1878	Newton, John, *Ash Lea, Croydon-road, Penge, S.E.*
1878	Nicholson, Professor J. S., M.A. *University of Edinburgh.*
1858	Nightingale, Miss Florence, 10, *South-street, Park-lane, W.*
1877	Nix, Samuel Dyer, F.C.A., 3, *King-street, Cheapside, E.C.*
1871	*Noble, Benjamin, *North-Eastern Bank, Newcastle-on-Tyne.*
1883	Norfolk, J. Ernest Walter, *Bridge House*, 181, *Queen Victoria-street, E.C.*
1884	Norman, Charles Loyd, *Oakley, Bromley, Kent.*
1877	Norman, General, Sir Henry Wylie, K.C.B., G.C.M.G., (*Governor of Queensland*).
1878	Northbrook, The Right Hon. the Earl of, G.C.S.I., D.C.L.. 4, *Hamilton-place, Piccadilly, W.*
1878	Notthafft, Theodor, *c/o Discount Bank, St. Petersburg.*
1880	Oakeshott, George Alfred, *Secretary's Office, General Post Office, E.C.*
1888	Oakley, Henry (*General Manager, Great Northern Railway*), 37, *Chester-terrace, Regent's Park, N.W.*
1884	Odgers, William Blake, LL.D., 4, *Elm-court, Temple, E.C.*
1880	*Oelsner, Isidor, *Highfield, Westwood-park, Forest-hill, S.E.*
1887	O'Galligan, George R., C.E.,
1862	Ogbourne, Charles Henry, A.I.A. 29, *Dalhousie-square, Calcutta.*
1885	OGLE, WILLIAM, M.A., M.D., F.R.C.P., &c., *General Register Office, Somerset House, W.C.*
1884	Ogston, George Henry,
1885	*Oldham, John, *River Plate Telegraph Company, Montevideo.*

Year of Election.	
1884	Oldroyd, Mark, M.P., *Hyrstlands, Dewsbury, Yorkshire.*
1878	Oppenheim, Henry, 16, *Bruton-street, Bond-street, W.*
1876	Orange, William, C.B., M.D., F.R.C.P., 35, *Cromwell-road, Hove, Brighton.*
1877	Ormond, Richard, 24, *Grainger-street West, Newcastle-on-Tyne.*
1887	Owen, Evan F., A.I.A., *Office of Government Statist, Melbourne, Victoria.*
1887	*Page, Edward D., (*Box* 3382,) *c/o Faulkner, Page, & Co., New York City, U.S.A.*
1886	Pain, James, *Borough, Micheldever, Hants.*
1866	*Palgrave, Robert Harry Inglis, J.P., F.R.S., *Belton, Great Yarmouth, Norfolk.*
1879	Palmer, George, J.P., *The Acacias, Reading.*
1884	Palmer, J. T., 8, *Wine Office-court, Fleet-street, E.C.*
1887	Pankhurst, Richard Marsden, LL.D., 225, *Strand, W.C.;* 10, *St. James's-square, Manchester.*
1888	Pannell, William Henry, *Library-chambers, Basinghall-street, E.C.*
1878	Park, David Francis, C.A., F.F.A., A.I.A., 17, *Change-alley, Cornhill, E.C.*
1887	Parker, Archibald, *Camden-wood, Chislehurst, Kent.*
1378	Parry, Thomas, *Grafton-place, Ashton-under-Lyne.*
1879	Partridge, Henry Francis, L.D.S., &c., *Sussex House, Sussex-place, South Kensington, S.W.*
1883	Paterson, John, 1, *Walbrook, E.C.*
1888	Pattullo, James Durie, 31, *St. Swithin's-lane, E.C.*
1877	Paul, Henry Moncreiff, 12, *Lansdowne-crescent, Notting Hill, W.*
1878	Paulin, David, 44, *Moray-place, Edinburgh.*

Year of Election.	
1879	Payn, Howard, 30, *Hyde-park-place, W.*
1884	*Peace, Walter, 21, *Finsbury-circus, E.C.*
1876	Pearson, Edwin James, *Athenæum Club, S.W.*
1857	*Pearson, Professor C. H., *c/o Sir John Pearson*, Q.C., 75, *Onslow-square, S.W.*
1880	*Pease, Sir Joseph Whitwell, Bart., M.P., 24, *Kensington-palace-gardens, W.*
1876	*Peek, Sir Henry William, Bart., *Wimbledon House, S.W.*
1878	Pellereau, Hon. Mr. Justice Etienne, *Penang, Straits Settlements.*
1886	Pembroke, The Right Hon. the Earl of, *Wilton House, Salisbury.*
1880	Pender, Sir John, K.C.M.G., 18, *Arlington-street, S.W.*; 50, *Old Broad-street, E.C.*
1871	Pennington, Frederick, 17, *Hyde Park-terrace, W.*
1874	Pepys, The Hon. George, *United University Club, Suffolk-street, S.W.*
1887	Percival, William, *Constitutional Club, S.W.*
1888	Perratt, William Henry, A.I.A., 193, *The Grove, Hammersmith, W.*
1883	Petheram, Frederick William, F.C.A., 2, *Lombard-court, E.C.*
1886	Peto, Henry, M.A., *Fleet House, Weymouth.*
1887	Phelps, Colonel A., 23, *Augustus-road, Edgbaston, Birmingham.*
1886	Phelps, The Rev. Lancelot Ridley, M.A., *Oriel College, Oxford.*
1874	Phené, John Samuel, LL.D., F.S.A., 32, *Oakley-street, S.W.*
1879	Philips, Herbert, 35, *Church-street, Manchester.*
1877	Phillipps, Henry Matthews, 41, *Seething-lane, E.C.*
1887	Phillips, Charles H., J.P. (*Registrar-General of Trinidad*), *Court House, Port of Spain, Trinidad.*
1883	Phillips, John Orwell, *Horseferry-road, Westminster, S.W.*
1878	Phipps, Pickering, *Collingtree Grange, Northampton.*
1871	*Pickering, John, F.R.G.S., F.S.A., 86, *Thicket-road, Anerley, S.E.*
1885	Pierrard, Paul, 12, *Moorgate-street, E.C.*

Year of Election.	
1878	*Pim, Joseph Todhunter, *Greenbank, Monkstown, County Dublin.*
1838	*Pinckard, George Henry, J.P., 12, *Grove-road, St. John's-wood, N.W.*
1888	Pinhey, The Hon. Mr. Justice Robert Hill, J.P., 18, *Bassett-road, North Kensington, W.*
1886	Pink, J. Francis, 62, *Chandos-street, Strand, W.C.*
1885	Pitman, Walter Hayward, 30, *Newgate-street, E.C.*
1879	Pixley, Francis William, 23, *Linden-gardens, W.*
1881	Planck, Charles, M.R.C.S. (*Deputy Surgeon-General*), *Allahabad, India.*
1883	Platt, James, *Rookwood, Hampstead, N.W.*
1861	Plowden, Sir Wm. Chicele, K.C.S.I., M.P., 5, *Park-crescent,* *Portland-place, W.; Wyke Hall, Gillingham, Dorset.*
1888	Plumb, Benjamin M., 36, *Lombard-street, E.C.*
1869	Pochin, Henry Davis, J.P., *Bodnant Hall, Eglwysbach, R.S.O., Denbighshire.*
1888	Pollard, James, *Chamber of Commerce, Edinburgh.*
1884	Polson, John, *West Mount, Paisley, N.B.*
1883	Pope, William Agnew, 113, *Cannon-street, E.C.*
1885	Popplewell, William Willott, *Victoria Chambers, Southampton-buildings, W.C.*
1879	*POWELL, FRANCIS SHARP, M.P. (*Horton Old Hall, Bradford*), 1, *Cambridge-square, Hyde Park, W.*
1888	Powell, James Heslop, 33, *Cornhill, E.C.*
1871	Power, Edward, 16, *Southwell-gardens, South Kensington, S.W.*
1884	Power, John Danvers, 3, *Westminster-chambers, Victoria-street, S.W.*
1877	*Prance, Reginald Heber, *Frognal, Hampstead, N.W.*
1877	Praschkauer, Maximilian, 8, *Barkston-mansions, Barkston-gardens, S.W.*
1867	*Pratt, Robert Lindsay, 80, *Bondgate, Darlington.*
1888	Price, Henry Sherley, *Woodbury Lodge, Breakspears-road, St. John's, S.E.*
1887	Price, L. L., M.A., *Oriel College, Oxford.*
1877	PRICE-WILLIAMS, RICHARD, M. INST. C.E., 38, *Parliament-street, S.W.*

Year of Election.	
1887	Probyn, Leslie Charles, 79, *Onslow-square, S.W.*
1884	*Proctor, William, 89, *Corporation-street, Manchester.*
1886	Provand, Andrew Dryburgh, M.P., *Lloyd's House, Manchester.*
1871	Puleston, Sir John Henry, M.P., 2, *Bank-buildings, Princes-street, E.C.*
1886	Pulley, Joseph, 90, *Piccadilly, W.*
1885	Purvis, Gilbert, *Ingle Neuk, Brackley-road, Beckenham, Kent.*

1879	Quail, Jesse, "*Northern Daily Telegraph,*" *Blackburn.*
1874	Quain, Richard, M.D., F.R.S., F.R.C.P., 67, *Harley-street, W.*
1888	Quirk, William Henry, 61, *Gracechurch-street, E.C.*

1883	Rabbidge, Richard, F.C.A., 32, *Poultry, E.C.*
1872	*Rabino, Joseph (*Manager*), *Crédit Lyonnais, Cairo, Egypt.*
1888	*Radcliffe, Sir David, J.P., *Thurstaston Hall, near Birkenhead.*
1858	*Radstock, The Right Honourable Lord, 70, *Portland-place, W.*
1888	Rae, George, *Redcourt, Birkenhead.*
1885	Rae, John, 77, *Disraeli-road, Putney, S.W.*
1887	Raffalovich, Arthur, 43, *Rue de Courcelles, Paris.*
1877	Raikes, Major George Alfred, F.S.A., F.R. His. Soc., 63, *Belsize-park, Hampstead, N.W.*
1860	Ramsay, Alexander Gillespie, F.I.A., *Canada Life Assurance Co., Hamilton, Canada West.*
1885	Randell, James S., *Corsham, Wilts.*
1879	Ranken, William Bayne, 99, *Eaton-square, S.W.*
1880	**RANKIN, JAMES**, M.P., 85, *Ennismore-gardens, Prince's Gate, S.W.*

Year of Election.	
1881	Raper, Robert George, *Chichester.*
1884	Raphael, Alfred, 87, *Alexandra-road, N.W.*
1859	Rathbone, P. H., *Greenbank Cottage, Liverpool.*
1878	Rathbone, William, M.P., 18, *Prince's-gardens, Prince's-gate, S.W.*
1884	*Ravenscroft, Francis, *Birkbeck Bank, Chancery-lane, W.C.*
1874	*RAVENSTEIN, ERNEST GEORGE, F.R.G.S., 21, *Upper Tulse-hill, Brixton, S.W.*
1886	Rawlins, Frederick, *Southport, Queensland.*
1877	*Rawlins, Thomas, 45, *King William-street, E.C.*
1835	RAWSON, SIR RAWSON W., K.C.M.G., C.B. (*Honorary Vice-President*), 68, *Cornwall-gardens, Queen's-gate, S.W.*
1888	Read, Thomas William, 30, *Castle-street, Liverpool.*
1875	Record, John, 23, *Kenninghall-road, Clapton, E.*
1888	Reid, Herbert Lloyd, *Ardentinny, Balham Park-road, Balham, S.W.*
1888	Rew, Robert Henry, 137, *High-street, Oxford.*
1886	Rhens, Robert, 20, *Fussett-square, Dalston, E.*
1888	Rhodes, George Webber, 131, *Wool Exchange, E.C.*
1879	Rhodes, John George, *Oakdene, Beckenham, Kent.*
1884	Richards, E. Windsor, C.E. *Middlesboro-on-Tees.*
1888	Richardson, J. H., 8, *Finch-lane, Cornhill, E.C.*
1884	Richardson, T. H., *Brynteg, Middlesbrough.*
1888	Richmond, Edwin, *Gladstone-buildings, Sheffield.*
1888	Ridgway, John, J.P., *Heath House, Cheddleton, Leek.*
1873	Ripon, The Most Hon. the Marquess of, K.G., F.R.S, &c. 1, *Carlton-gardens, S.W.*
1887	Roberts, Arthur Herbert, F.C.A., F.R.G.S., *Caledonian Chambers, St. Mary-street, Cardiff.*
1882	Roberts, Edward, F.R.A.S., (*Nautical Almanac Office*), 3, *Verulam-buildings, Gray's Inn, W.C.*

Year of Election.	
1885	Robertson, Thomas Stewart, *Collins-street West, Melbourne, Victoria.*
1887	Robinson, Henry James, 57, *Schubert-road, West-hill, Putney, S.W.*
1885	Rodger, Adam Kier, 81, *Renfield-street, Glasgow.*
1886	Roechling, Herman A., A.M. Inst. C.E., 23, *Highfield-street, Leicester.*
1880	*Ronald, Byron L., 14, *Upper Phillimore-gardens, W.*
1885	Roper, Alderman William,
1873	*ROSEBERY, THE RIGHT HON. THE EARL OF, LL.D., F.R.S. (*Vice-President*), *Lansdowne House, Berkeley-square, W.*
1880	Roth, Henry Ling, 3, *Park-terrace, Lightcliffe, near Halifax.*
1865	Ruck, George Thomas, *The Hawthorns, Dorville-road, Lee, S.E.*
1888	Rudd, Thomas, *Athenæum Club, Pall Mall, S.W.*
1879	Runtz, John, *Linton Lodge, Lordship-road, Stoke Newington, N.*
1888	Rusher, Edward Arthur, F.I.A., 142, *Holborn Bars, E.C.*
1888	Rushton, Thomas,
1886	Russell, Arthur B., A.C.A., 11, *Ludgate-hill, E.C.;* 20, *Beacon-hill, Camden-rd., N.*
1878	Russell, Richard F., 8, *John-street, Adelphi, W.C.*
1887	Russell, Thomas, C.M.G., 59, *Eaton-square, S.W.*
1873	Rutherford-Elliot, J. G.,
1884	Ryan, Gerald Hemmington, F.I.A.,
1887	Sacré, Alfred Louis, C.E., 60, *Queen Victoria-street, E.C.*
1873	*Salisbury, The Most Hon. the Marquess of, K.G., P.C., F.R.S., 20, *Arlington-street, W.*
1881	Salmon, James, 21, *Finsbury Pavement, E.C.*
1875	*Salomons, Sir David Lionel, Bart., J.P., *Broom-hill, Tunbridge Wells.*

Year of Election.	
1888	Salt, Thomas, M.P., *Weeping Cross, Stafford.*
1876	Samuelson, Sir Bernhard, BART., M.P., F.R.S., 56, *Prince's-gate, Hyde-park, S.W.*
1868	Sandell, Edward, C.A., 181, *Queen Victoria-street, E.C.*
1860	Sargant, William Lucus, 1, *Rotton-park-road, Birmingham.*
1886	Sauerbeck, Augustus, 4, *Moorgate-street-buildings, E.C.*
1877	Saunders, Charles Edward, M.D., *County Asylum, Hayward's Heath, Sussex.*
1852	Saunders, James Ebenezer, F.G.S. 9, *Finsbury-circus, E.C.*
1879	Saunders, William, *Mount View, Streatham, S.W.*
1888	Sawyer, Lucian Willard, *Billiter-square-buildings, E.C.*
1887	*Scarth, Leveson, M.A., 3, *Melbury-rd., Kensington, W.; Manor-rd., Bournemouth.*
1883	Schidrowitz, Samuel, 102, *Oxford-gardens, Notting Hill, W.*
1877	Schiff, Charles, 22, *Lowndes-square, S.W.*
1877	Schneidau, Charles John, 6, *Westwick-gardens, West Kensington-park, W.*
1883	*Schwann, John Frederick, *Oakfield, Wimbledon, S.W., and* 6, *Moorgate-street, E.C.*
1883	Sclanders, Alexander, 10, *Austin Friars, E.C.*
1885	Scott, James Henry, 12, *Waterloo-place, S.W.*
1885	Scott, John D., M.A., *St. John's College, Cambridge.*
1888	Scotter, Charles (*General Manager*), *Waterloo Station, Waterloo-road, S.E.*
1887	Seaton, Edward, M.D., Lond., F.R.C.P., 35, *George-street, Hanover-square, W.*
1880	*Seeley, Charles, jun., *Sherwood Lodge, Nottingham.*
1883	Seligman, Isaac,
1886	Selwyn, Captain Charles W., M.P., 21, *Lowndes-square, S.W.*
1886	Seyd, Ernest J. F. 17, *Gracechurch-street, E.C.*
1873	Seyd, Richard, 38, *Lombard-street, E.C.*
1888	Shaw, James Charles, 35, *Leinster-gardens, Hyde Park, W.*

Year of Election.	
1886	Shaw-Stewart, Michael Hugh, M.P., D.L., 7, *Charles-street, Berkeley-square, W.*
1887	Shennan, David A., *Oriental Club, Hanover-square, W.*
1879	Shepheard, Wallwyn Poyer Burnett, M.A., 24, *Old Buildings, Lincoln's Inn, W.C.*
1885	Sherwin, Joseph Henry, 16, *Whitehall-place, S.W.*
1888	Shillcock, Joshua, B.A., *Bank of England, West Branch, Burlington-gardens, S.W.*
1888	Shuttleworth, Thomas G., *Queen's Insurance-buildings, Church-street, Sheffield.*
1871	Sidgwick, Prof. Henry, M.A. *Trinity College, Cambridge.*
1886	Silver, S. W., 3, *York-gate, Regent's Park, N.W.*
1887	Sim, Major-General Coysgarne (late R.E.), 32, *James'-street, Buckingham-gate, S.W.*
1878	Simmonds, G. Harvey, 1, *Whitehall, S.W.*
1850	Singer, Charles Douglas, 53, *The Common, Upper Clapton, E.*
1886	Sitwell, Sir George Reresby, Bart., J.P., *Renishaw Hall, Chesterfield.*
1882	Skinner, Charles Weeding, *Hill Crest, Theydon Bois, Essex.*
1884	Skliros, George Eustace, M.A., F.R.G.S., &c., 289, *Regent-street, W.*
1881	Skrine, Francis Henry, *c/o Messrs. King and Co.,* 45, *Pall Mall, S.W.*
1888	Slade, Alfred Thomas, *Wardrobe-chambers, Queen Victoria-street, E.C.*
1888	Slade, Francis William, 10, *Victoria-chambers, Westminster, S.W.*
1883	Sly, Richard Stevens, F.R.G.S., *Fern Villa, Queen's-road, New Cross Gate, S.E.*
1869	Smee, Alfred Hutcheson, M.R.C.S., *The Grange, Wallington, Surrey.*
1886	*Smith, Arthur Manley, 29, *Lincoln's Inn-fields, W.C.*
1878	*Smith, Charles, M.R.I.A., F.G.S., Assoc. Inst C.E., *c/o Dr. Gilbert, F.R.S., Harpenden, St. Albans.*
1888	Smith, Professor David B., M.D., F.R.C.P., *Eastcliff, Woolston, near Southampton.*
1883	*Smith, The Hon. Sir Donald A., K.C.M.G., LL.D., 1157, *Dorchester-street, Montreal, Canada.*
1871	Smith, E. Cozens, 1, *Old Broad-street, E.C.*
1883	Smith. E. Woodley, A.C.A., 28, *Budge-row, Cannon-street, E.C.*

Year of Election.	
1878	*Smith, George, LL.D., C.I.E., *Serampore House, Napier-road, Edinburgh.*
1888	Smith, H. Llewellyn, B.A. (Oxon), B.Sc. (Lond.), *Toynbee Hall*, 28, *Commercial-road, Whitechapel, E.*
1877	Smith, Howard S., A.I.A., F.F.A. 37, *Bennett's Hill, Birmingham.*
1878	*Smith, James, *South Indian Railway, Trichinopoly, Madras Presidency.*
1877	Smith, John, 8, *Old Jewry, E.C.*
1879	Smith, John Fisher, 76, *Cheapside, E.C.*
1887	Smith, Joseph, *Oakeswell Hall, Wednesbury.*
1883	Smith, Samuel, M.P., 7, *Delahay-street, Westminster, S.W.*
1880	Smith, Thomas Sherwood, *Firgrove, Keynsham, near Bristol.*
1867	*Smith, The Right Honourable William Henry, M.P., 3, *Grosvenor-place, S.W.*
1888	Smith, Walter J., 57, *Bishopsgate-street Within, E.C.*
1887	Snell, Arthur Henry, 27, *Mincing-lane, E.C.*
1884	Solomon, The Hon. Michael, C.M.G. (*Jamaica*), *c/o Joseph Bravo and Co.*, 48, *St. Mary Axe, E.C.*
1855	Sowray, John Russell, *Office of Woods*, 1, *Whitehall-place, S.W.*
1884	Spark, C. W., *The Chantry, Alford, Lincolnshire.*
1867	*Spencer, Robert James, *High-street, Portsmouth.*
1881	Spice, Robert Paulson, C.E., 21, *Parliament-street, Westminster, S.W.*
1883	Spicer, Albert, *Woodford, Essex, and* 50, *Upper Thames-street, E.C.*
1856	*Sprague, Thomas Bond, M.A., F.I.A., 26, *St. Andrew-square, Edinburgh.*
1872	Spriggs, Joseph, *Foxton, near Market Harbro'.*
1882	Stack, Thos. Neville, 3, *Church-lane, College-green, Dublin.*
1856	*Stainton, Henry Tibbats, F.R.S., *Mountsfield, Lewisham, S.E.*
1885	Standfield, John, 44, *Lillieshall-road, Clapham, S.W.*
1877	Staples, Sir Nathaniel Alexander, Bart., *Lissan, Cookstown, Tyrone, Ireland.*
1880	Stark, James, 17, *King's Arms-yard, E.C.*

Year of Election.	
1888	Steele, William Johnstone, 71, *Old Broad-street, E.C.*
1880	Stephens, William Davies, J.P., 4, *Abbotsford-terrace, Newcastle-on-Tyne.*
1882	*Stern, Edward De, 11, *Princes-gate, S.W.*
1885	Stevens, Marshall, *Highfield House, Urmston, near Manchester.*
1887	Stewart, Robert Muter, *Hawthorne, Bickley, Kent.*
1883	Stone, Frank, *Cleveland-villas, Ilford, Essex.*
1877	Stone, William Alfred, 90, *Cannon-street, E.C.; Hayton, Bramley Hill, Croydon.*
1855	*Stott, John, F.I.A.,
1865	Strachan, Thomas Young, F.I.A., *Winchester House, Old Broad-street, E.C.*
1872	Strachey, General Richard, R.E., C.S.I., F.R.S., *India Office, Westminster, S.W.*
1880	Strutt, Hon Frederick, *Milford House, near Derby.*
1884	*Sugden, Richard, *The Farre Close, Brighouse, Yorkshire.*
1880	*Summers, William, M.P. (*Sunnyside, Ashton-under-Lyne*). *Reform Club, Pall Mall, S.W.*
1884	Sutherland, Thomas, M.P., 167, *Cromwell-road, South Kensington, S.W*
1881	Sykes, George Samuel, 1, *Grant's-lane, Calcutta, India.*
1859	*Tait, Patrick Macnaghten, F.R.G.S., 53, *Grand Parade, Eastbourne.*
1884	Tarbet, Thomas William, 33, *Warwick-street, Regent-street, W.*
1880	Taylor, George, 6, *Queen Anne's-gate, S.W.*
1883	Taylor, Harry, 40, *Albert Hall-mansions, Kensington, S.W.*
1888	*Taylor, Theodore Cooke, J.P., *Sunny Bank, Batley, Yorkshire.*
1884	Tempany, Thomas William, F.R.H.S., 25, *Bedford-row, W.C.*

Year of Election.	
1882	Temperley, Joseph, 1, *Cail's-buildings, Newcastle-on-Tyne.*
1888	Temperley, William Angus, 2, *St. Nicholas-buildings, Newcastle-on-Tyne.*
1880	Temple, Sir Richard, Bart., G.C.S.I., M.P., D.C.L., &c., *Carlton Club, Pall Mall, S.W.*
1888	Theobald, John Wilson, 75, *Palmerston-buildings, E.C.*
1888	Thomas, David Alfred, M.P., *Llanwern, near Newport, Mon.*
1887	Thomas, John, 18, *Wood-street, E.C.*
1879	Thomas, W. Cave, 8, *Fitzroy-street, Fitzroy-square, W.*
1878	Thompson, Alfred Boyle, F.R.C.P. Edin., 18, *Serjeants'-inn, Temple, E.C.*
1864	*Thompson, Henry Yates, 26*a*, *Bryanston-square, W.*
1868	Thomson, James, 35, *Nicholas-lane, E.C.*
1871	Thomson, Thomas D., 57, *Moorgate-street, E.C.*
1887	Thomson, William Edward, 75, *White Ladies-road, Clifton, Bristol.*
1883	Thorburn, Alexander Brown, 17, *Marloes-road, Kensington, W.*
1882	Tinker, James, 80, *Cromwell-road, S.W.*
1879	Tipping, William, *Oakfield House, Ashton-under-Lyne.*
1855	Tomline, Colonel George, 1, *Carlton House-terrace, S.W.*
1868	*Treatt, Frank Burford, *Immigration Office, Sydney, New South Wales.*
1868	Tritton, Joseph Herbert, 54, *Lombard-street, E.C.*
1888	Trotter, John T., 27, *Brazennose-street, Manchester.*
1887	Tunley, George, 3, *Foley-avenue, Hampstead, N.W.*
1880	Tupp, Alfred Cotterill (*Bengal Civil Service*), *c/o Messrs. King, King, and Co., Bombay.*
1878	Turnbull, Alexander, 118, *Belsize park-gardens, N.W.*
1885	Turner, William, *Board of Trade, Cardiff.*
1841	Tyndall, William Henry, F.I.A., *Morlands, Oxford-road, Redhill.*

Year of Election

876 Urlin, Richard Denny,
22, *Stafford-terrace, Phillimore-gardens, W.*

1842 Valpy, Richard
43, *Prince's-gate, S.W.*
1868 Vanderbyl, Philip,
51, *Porchester-terrace, W.*
1880 Van de Linde, Gérard, F.C.A.,
12, *Laurence Pountney-lane, Cannon-street, E.C.*
1888 Van Raalte, Marcus,
28, *Cleveland-square, Hyde Park, W.*
1884 Veevers, Richard,
Woningworth, Fulwood-park, Preston.
1888 Verdin, William Henry, J.P.,
Winsford, Cheshire.
1886 Vernon, The Right Hon. Lord,
Sudbury Hall, Derby.
1874 Vian, William John,
64, *Cornhill, E.C.*
1888 Vian-Williams, Rev. Harry,
3, *Waterloo-place, North Shields.*
1876 Vigers, Robert,
4, *Frederick's-place, Old Jewry, E.C.*
1887 Vincent, C. E. Howard, M.P., C.B.,
1, *Grosvenor-square, W.*
1885 Vincent, Frederick James, A.I.A.,
23, *Harvest-road, Holloway, N.*
1877 Vine, Sir John Richard Somers,
1, *Adam-street, Adelphi, W.C.*

1873 Wakeford, Henry,

1883 Walford, John Edward, C.C.,
73, *Knightrider-street, E.C.*
1882 Wallen, Robert, J.P.,
Harlech, Hawthorn, near Melbourne, Victoria.

Year of Election.	
1868	Wallis, Charles James, 93, *Brecknock-road, Camden-road, N.*
1880	Wallis, E. White, 49, *Clifton-hill, St. John's Wood, N.W.*
1888	Walmsley, Frederic, 49, *Hanging Ditch, Manchester.*
1876	Walter, Arthur Fraser, 15, *Queen's Gate-terrace, S.W.*
1850	Walter, John, 40, *Upper Grosvenor-street, W.*
1879	Wansey, Arthur H., *Sambourne, Stoke Bishop, Bristol.*
1888	Ward, Henry, 103, *Cannon-street, E.C., and Cedar-road, Sutton.*
1887	Wardle, Thomas,
1888	Warren, Reginald Augustus, J.P., *Preston-place, near Worthing.*
1888	Wartnaby, William Wade, *Market Harborough, Leicestershire.*
1886	Waters, Alfred Charles, *General Register Office, Somerset House, Strand, W.C.*
1865	Waterhouse, Edwin, B.A., A.I.A., F.C.A., 44, *Gresham-street, E.C.*
1883	Watson, T. Wilkinson, 183, *West George-street, Glasgow.*
1882	Watson, Walter, *Pulbro Lodge, Northampton-park, Canonbury, N.*
1883	Watson, William Livingstone, 7, *Wetherby-gardens, South Kensington, S.W.*
1885	*Watt, William, 27, *North Albert-street, Aberdeen.*
1865	Webster, Alphonsus,
1873	Webster, James Hume, 14, *Chapel-street, Park-lane, W.*
1888	Webb, Henry Barlow, 7, *Warrior-square-terrace, St. Leonards-on-Sea.*
1887	Weir, Archibald, M.A., Oxon., *Highland, Windmill-hill, Enfield.*
1873	*WELBY, SIR REGINALD EARLE, K.C.B., *The Treasury, Whitehall, S.W.*
1886	Weller, Ebenezer Thomas,
1873	Wells, W. Lewis, 50, *Old Broad-street, E.C.*
1855	Welton, Thomas Abercrombie, *Rectory Grove House, Clapham, S.W.*
1879	Wenley, James Adams, *Bank of Scotland, Bank-street, Edinburgh.*

Year of Election.	
1876	Westgarth, William, 8, *Finch-lane, E.C.*
1886	Westhead, Thomas, *Castletown, Stafford.*
1879	*Westlake, John, Q.C., LL.D., *The River House*, 3, *Chelsea Embankment, S.W.*
1882	*Whadcoat, John Henry, *Crown Buildings, Old Broad-street, E.C.*
1883	*Whadcoat, William Edward, 112, *Grosvenor-road, Highbury New-park, N.*
1878	Wharton, James, *Edgehill, Netherhall-gardens, FitzJohn's-avenue, N.W.*
1887	Whinney, Frederick, 8, *Old Jewry, E.C.*
1859	Whitbread, Samuel, M.P., 10, *Ennismore-gardens, Princes-gate, S.W.*
1876	Whitcher, John, Jr., F.I.A., 81, *King William-street, E.C.*
1887	*White, The Rev. George Cecil, M.A., *St. Paul's Vicarage, Southampton.*
1863	White, Leedham, 25, *Cranley-gardens, South Kensington, S.W.*
1871	White, William, 23, *Wynell-road, Forest-hill, S.E.*
1888	Whitehead, Alderman James, J.P., D.L., &c., (*The Right Hon. the Lord Mayor*), *The Mansion House, E.C., and Highfield House, Catford.*
1873	Whitehead, Jeffery, 39, *Throgmorton-street, E.C.*
1884	Whiteley, William, *Westbourne-grove, Bayswater, W.*
1879	*Whitwill, Mark, J.P., *Bristol.*
1884	Wightman, Charles, 1, *Fenchurch-avenue, E.C.*
1888	Wilkinson, James H., 9, *Priory-place, Doncaster.*
1875	Wilkinson, Thomas Read, *Manchester and Salford Bank, Manchester.*
1860	Willans, John Wrigley, *The Woodlands, Kirkstall, Leeds.*
1864	Williams, Frederick Bessant, 46, *Leicester-square, W.C.*
1870	Williams, Henry Reader, 6, *Lime-street, E.C., and Oak Lodge, Highgate, N.*
1888	Williams, John, 32, *Parliament-street, S.W.*
1888	*Williams, Robert, Jun., 20, *Birchin-lane, E.C.*

Year of Election.	
1887	Williamson, George Charles, F.R. Hist. Soc., *Dunstanbeach*, *Guildford.*
1888	Williamson, John W., 4, *Stone-buildings*, *Lincoln's Inn*, *W.C.*
1888	Wills, John T., B.A., F.R.G.S., 273, *Vauxhall Bridge-road*, *S.W.*, *and Esher*, *Surrey.*
1884	Wilson, James (*Deputy Commissioner*), *Shahpur*, *Panjab*, *India.*
1886	Wilson, Robert,
1874	*Wilson, Robert Porter, 5, *Cumberland-terrace*, *Regent's-park*, *N.W.*
1884	Wishart, G. D., 8, *Livingstone-avenue*, *Sefton-park*, *Liverpool.*
1885	Wolff, Captain M. Paul,
1887	Woodhouse, Coventry Archer, 30, *Mincing-lane*, *E.C.*
1877	Woodrow, Thomas John, *Sisland Cottage*, *Wanstead*, *E.*
1888	Woolfe, Thomas Rodriques, A.C.A., 15, *King-street*, *Cheapside*, *E.C.*
1838	Woolhouse, Wesley Stoker Barker, F.R.A.S., *Alwyne Lodge*, *Alwyne-road*, *Canonbury*, *N.*
1878	Worsfold, Rev John Napper, M.A., *Haddlesey Rectory*, *near Selby*, *Yorkshire.*
1888	Worsfold, William Basil, M.A. (Oxon.), 170, *Montreal-street*, *Christchurch*, *New Zealand.*
1887	Worthington, A. W., B.A., *Old Swinford*, *Stourbridge.*
1887	Wreford, George, 33, *Carey-street*, *Lincoln's-inn*, *W.C.*
1880	Wren, Walter, 7, *Powis-square*, *W.*
1883	Wright, Bryce McMurdo, F.R.G.S., F.Z.S., F.R. Hist. Soc., 26, *Savile-row*, *W.*
1887	Wright, William Ernest, 53, *Stapleton Hall-road*, *Stroud-green*, *N.*
1884	Wyllie, Colin Campbell, 34, *Clement-lane*, *E.C.*, *and Walden*, *Chislehurst.*

Year of Election.	
1879	Yeats, John, LL.D., 7, *Beaufort-square, Chepstow.*
1886	Yerburgh, Robert Armstrong, M.P., 7, *Addison-road, Kensington, W.*
1888	*Yglesias, Miguel, 2, *Tokenhouse-buildings, E.C.*
1877	*Youll, John Gibson, *Jesmond-road, Newcastle-on-Tyne.*
1882	Young, E. M., 13, *Leadenhall-street, E.C.*

⁂ *The Executive Committee request that any inaccuracy in the foregoing list may be pointed out to the* ASSISTANT SECRETARY, *and that all changes of address may be notified to him, so that delay in forwarding communications and the publications of the Society may be avoided.*

HONORARY FELLOWS.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.,

Honorary President.

EUROPE.

Austria and Hungary.

Year of Election.		
1874.	**Budapest**......	M. CHARLES KELETI, Aulic Councillor; Chief of the Royal Hungarian Statistical Bureau. Doctor of Civil Law; Knight of the Austrian Order of Leopold; Commander of the Russian Order of St. Stanislaus, and of the Portuguese Order of la Villa Viçosa; Associate of the Statistical Society of Paris.
1877.	**Vienna**........	DR. HUGH FRANCIS BRACHELLI, Aulic Councillor, Chief of the Statistical Department, Ministry of Commerce; Professor at the Technical High School in Vienna; President of the Permanent Commission for Commercial Values. Commander of the Russian Orders of St. Anna and St. Stanislaus, of the Luxembourg Order of the Oak-Crown; Officer of the Order of the Italian Crown; Knight of the Order of the House of Saxe-Ernestine; Officer of Public Instruction of France, &c., &c.
1854.	„	S. E, M. CHARLES BARON DE CZOERNIG, Privy Councillor (actuel) of His Imperial and Royal Majesty; late President of the Imperial and Royal Central Commission of Statistics at Vienna; Associate of the Statistical Society of Paris.
1877.	„	M. MAX WIRTH, late Chief of the Federal Statistical Bureau of Switzerland.

Belgium.

Year of Election.		
1879.	**Brussels**	DR. EUGÈNE JANSSENS, Doctor of Medicine, &c.; Chief Inspector of the Board of Health in the City of Brussels. Member of the Royal Academy of Medicine, of the Central Statistical Commission, of the Superior Council of Health, and of the Local Medical Commission, Secretary of the Local Commission of Statistics; Knight of the Order of Leopold, and of the Order of St. Maurice and St. Lazare, &c.; Associate of the Statistical Society of Paris.

Denmark.

Year of Election.		
1878.	**Copenhagen**	PROFESSOR VIGAND ANDREAS FALBE-HANSEN, Professor of the University of Copenhagen; Member of the "Folkething."
1852.	,,	DR. PETER ANTON SCHLEISNER, Doctor of Medicine, State Councillor; Knight of the Order of Dannebroge, and the Swedish Order of "Nordstjerne"; Officer of Health of the City of Copenhagen; Member of the Royal General Board of Health for Denmark, Corresponding Member of the Medical Society in Stockholm and Christiania, of the "Société de Médecine publique et d'Hygiène professionelle" in Paris, of the "Société d'Hygiène publique de Bordeaux," and of the "Société royale de Médecine publique de Belgique," &c.

France.

1880.	**Paris**	DR. JACQUES BERTILLON, Doctor of Medicine, Chief of the Statistical Works of the City of Paris; Director of the "Annals of International Demography;" Professor ("suppléant") at the School of Anthropology; Member of the Statistical Society of Paris.
1856.	,,	M. MAURICE BLOCK, Member of the Institute of France (Academy of Moral and Political Sciences); Knight of the Legion of Honour, and of Orders of Sweden, Russia, Prussia, Bavaria, Austria-Hungary, Greece, Italy, Spain, Portugal; Member of the Statistical Society of Paris.
1879.	,,	DR. ARTHUR CHERVIN, Director of the Institution of Stammerers of Paris; Doctor of Medicine and Surgery; Member of the Permanent Statistical Commission of the City of Paris; Founder of the "Annals of International Demography," &c.; Member of the Statistical Society of Paris.
1878.	,,	M. MAXIMIN DELOCHE, Member of the Institute of France; Honorary Director of the General Statistics of France; Commander of the Legion of Honour; Officer of Public Instruction; Commander of the Imperial and Royal Order of Francis Joseph of Austria-Hungary; member of several learned societies.
1870.	,,	M. CLÉMENT JUGLAR, Past President of the Statistical Society of Paris; Vice-President of the Society of Political Economy of Paris.
1860.	,,	M. PIERRE ÉMILE LEVASSEUR, Member of the Institute of France; Professor at the College of France and of the Conservatory of Arts and Sciences; Past President of the Statistical Society of Paris; Vice-President of the French Temperance Society and of the Society of Political Economy of Paris.

Year of Election		
1860.	**Paris**	M. MARIE LOUIS PIERRE FELIX ESQUIROU DE PARIEU, Senator; Member of the Institute of France; Grand Cross of the Legion of Honour, and Companion of several foreign orders.
1876.	,,	THE PRESIDENT (for the time being) OF THE STATISTICAL SOCIETY OF PARIS.
1880.	,,	THE HONORABLE JEAN BAPTISTE LÉON SAY Senator; Member of the Institute of France; Past President of the Statistical Society of Paris, of the National Society of Horticulture, of the National Society of Agriculture, and of the Society of Political Economy of Paris.
1887.	,,	M. DANIEL WILSON, Deputy; Past President of the Statistical Society of Paris; Reporter-General of the Budget Committee.

Germany.

Year of Election		
1877.	**Bavaria**	DR. GEORGE MAYR, formerly Under Secretary of State in the Imperial Ministry for Alsace-Lorraine; and formerly Director of the Royal Bureau of Statistics of Bavaria; Associate of the Statistical Society of Paris.
1860.	,,	DR. GEORGE KARL LEOPOLD SEUFFERT, Knight of the Order of St. Michael; formerly Chief Inspector and Director of the Royal Custom House at Simbach.
1878.	**Berlin**	DR. CHARLES BECKER, Director of the Imperial Statistical Department of the German Empire; "Geheimer Ober-Regierungsrath;" Associate of the Statistical Society of Paris.
1854.	,,	DR. ERNEST ENGEL, formerly Director of the Royal Statistical Bureau of Prussia; Associate of the Statistical Society of Paris.
1876.	**Frankfort**	THE PRESIDENT (for the time being) OF THE GEOGRAPHICAL AND STATISTICAL SOCIETY OF FRANKFORT.
1871.	**Stuttgart**	SIR HENRY PAGE-TURNER BARRON, Bart., C.M.G., British Minister Resident at Stuttgart.

Great Britain and Ireland.

Year of Election		
1876.	**Dublin**	THE PRESIDENT (for the time being) OF THE STATISTICAL AND SOCIAL INQUIRY SOCIETY OF IRELAND.
1876.	**Manchester**	THE PRESIDENT (for the time being) OF THE MANCHESTER STATISTICAL SOCIETY.

Year of Election.

1878. C

1852.

1880.

1856.

1879

37

Year of Election.

1886. **Madrid**........ EXM̂O SEÑOR D. CARLOS IBAÑEZ Ê IBAÑEZ DE IBERO, General of the Spanish Army; Member of the Royal Academy of Sciences of Madrid; Corresponding Member of the Institute of France (Academy of Sciences); Associate of the Royal Academy of Brussels; President of the International Geodesic Association; President of the International Committee of Weights and Measures, and of the Permanent Commission of Weights and Measures of Spain; Director-General of the Geographical and Statistical Institute of Spain; &c., &c.

Sweden and Norway.

1858. **Christiania**.... PROFESSOR THORKIL HALVORSEN ASCHEHOUG, Professor of Law and Political Economy at the University of Christiania; Chairman of the Board of Directors of the Royal Norwegian Hypothekbank; Member of the Institute of International Law, and of the Academies of Christiania, Trondhjem and Upsala, and of the Royal Historical Society of Denmark; Commander of the Norwegian Order of St. Olave; Member of the Swedish Order of the North Star; and Commander of the First Class of the Order of Danebrog.

1874. „ .. M. A. N. KIŒR, Director of the Statistical Bureau of Norway; Associate of the Statistical Society of Paris.

1860. „ .. THOMAS MICHELL, Esq., C.B., Her Majesty's Consul-General in Norway.

Turkey.

1877. **Constantinople.** HIS HIGHNESS AHMED VEFYK PACHA, Senator, &c.

AMERICA.

Dominion of Canada.

1876. **Ottawa**........ JOHN LANGTON, Esq., M.A., late Auditor-General.

United States.

1873. **Albany, N.Y.** .. THE HON. WILLIAM BARNES, Counsellor-at-Law; Ex-Superintendent of the Insurance Department, State of New York.

Year of Election.		
1876.	**New Haven, Conn.**	FRANCIS A. WALKER, Esq., Ph.D., LL.D., President of the Massachusetts Institute of Technology; Member of the National Academy of Sciences; President of the American Statistical Association, Boston.
1870.	**Norwich, Conn.**	THE HON. DAVID A. WELLS, D.C.L., LL.D., Late Special Commissioner of Revenue of the United States; Chairman of Commission for the Revision of Taxes of the State of New York; President of the American Social Science Association; Member of the Board of Arbitration of American Railways; Corresponding Member of the Institute of France; President of the American Free Trade League; Chairman 1883 of the Department of Finance of the American Social Science Association.
1870.	**Taunton, Mass.**	THE HON. JOHN ELIOT SANFORD, Lawyer; Speaker of the House of Representatives; Insurance Commissioner; Chairman of the Board of Harbour and Land Commissioners.
1881.	**Washington** ..	JOHN S. BILLINGS, Esq., M.D., Surgeon United States Army; Member of the National Academy of Science, &c.
1877.	„	EDWARD YOUNG, Esq., A.M., Ph.D., formerly Chief of the Bureau of Statistics, United States of America.

ASIA.

India.

1886.	**Simla**	JAMES EDWARD O'CONOR, Esq., Assistant Secretary, Department of Finance and Commerce, Government of India.

AUSTRALASIA.

New South Wales.

1876.	**Sydney**........	EDWARD GRANT WARD [illegible] General, and a Magist[illegible] South Wales.

New Zealand.

Year of Election.		
1876.	**Wellington**	SIR JAMES HECTOR, K.C.M.G., M.D., F.R.S.S., L. and E., F.G.S., &c. Director of the Geological Survey, of the Meteorological Department, and of the New Zealand Institute.

Queensland.

1877.	**Brisbane**	HENRY JORDAN, Esq., Member of Legislative Assembly.

Tasmania.

1876.	**Hobart**	EDWIN CRADOCK NOWELL, Esq., J.P., Clerk of Executive and Legislative Councils, and late Government Statistician.

Victoria.

1875.	**Melbourne**	HENRY HEYLYN HAYTER, Esq., C.M.G., Government Statist of Victoria; Officer of Public Instruction (France); Honorary Member of the Statistical and Social Inquiry Society of Ireland, of the Statistical Association of Tokio, and of the Royal Society of Tasmania; Honorary Corresponding Member of the Statistical Society of Manchester, of the Geographical Society of Bremen, and of the Royal Society of South Australia; Fellow and Honorary Corresponding Secretary for Victoria of the Royal Colonial Institute; Associate of the Statistical Society of Paris.
1858.	„	WILLIAM HENRY ARCHER, Esq., K.S.G., F.I.A., F.L.S., &c., Barrister-at-Law.

NOTE.—The Executive Committee request that any inaccuracies in the foregoing List of HONORARY FELLOWS may be pointed out, and that all changes of address may be notified to the Secretary, so that delay in forwarding communications and the publications of the Society may be avoided.

ROYAL STATISTICAL SOCIETY.

Index to Rules and Bye-Laws.

BYE-LAWS.

1. The Objects of the Society.
2. Society to consist of Fellows and Honorary Fellows.
3. Number of Fellows unlimited; Hon. Fellows not to exceed 70.
4. Fellows—Candidates to be proposed by two or more Fellows.
5. Do. to be elected by Ballot.
6. Do. on Admission may attach F.S.S. to their Names.
7. Honorary Fellows, Proposed by Council; Elected by Ballot.
8. Fellows, to pay an Annual Subscription or a Composition.
9. Do. how disqualified. Written notice of withdrawal required.
10. Do. and Honorary Fellows, Mode of Expulsion of.
11. Trustees. Property of Society, may be vested in Three.
12. President, Council, and Officers, Number and Particulars of.
13. Do. do. do. Election and Retirement of
14. Do. do. do. Nomination of.
15. Do. do. do. Extraordinary Vacancies of.
16. Committees, may be appointed by Council.
17. Auditors, Appointment and Duties of.
18. Meetings, Ordinary and General, when to be held.
19. Ordinary Meetings, Business of. Strangers may be introduced.
20. Annual General Meeting, Business of.
21. Special General Meetings may be called.
22. President, Duties of. To have a Casting Vote.
23. Treasurer, Duties of, subject to the Council.
24. Honorary Secretaries, Duties of.
25. Vice-Presidents, Powers of.
26. Council, Duties of, in Publishing Papers and Expending Funds.
27. Do. may frame Regulations not inconsistent with Bye-laws.
28. Do. Duties of, with reference to the Common Seal.
29. Do. No Dividend, Gift, Division, or Bonus in Money to be made to Fellows, except as hereinafter provided for.
30. Do. to publish a Journal of the Transactions of the Society, and may remunerate Editors and their Assistants.
31. Do. Discretion of, as to Right of Property reserved in all Communications received.

RULES AND BYE-LAWS OF THE ROYAL STATISTICAL SOCIETY.

Objects of the Society.

1. The objects of the Royal Statistical Society are to collect, arrange, digest and publish facts, illustrating the condition and prospects of society in its material, social, and moral relations; these facts being for the most part arranged in tabular forms and in accordance with the principles of the numerical method.

The Society collects new materials, condenses, arranges, and publishes those already existing, whether unpublished or published in diffuse and expensive forms, in the English or in any foreign language, and promotes the discussion of legislative and other public measures from the statistical point of view. These discussions form portions of the published Transactions of the Society.

Constitution of the Society.

2. The Society consists of Fellows and Honorary Fellows, elected in the manner hereinafter described.

Number of Fellows and Honorary Fellows.

3. The number of Fellows is unlimited. Foreigners or British subjects of distinction residing out of the United Kingdom may be admitted as Honorary Fellows, of whom the number shall not be more than seventy at any one time.

Proposal of Fellows.

4. Every Candidate for admission as a Fellow of the Society shall be proposed by two or more Fellows, who shall certify from their personal knowledge of him or of his works, that he is a fit person to be admitted a Fellow of the Society. Every such certificate having been read and approved of at a Meeting of the Council, shall be suspended in the office of the Society until the following Ordinary Meeting, at which the vote shal be taken.

Election of Fellows.

5. In the election of Fellows, the votes shall be taken by ballot. No person shall be admitted unless at least sixteen Fellows vote, and unless he have in his favour three-fourths of the Fellows voting.

Admission of Fellows.

6. Every Fellow elect is required to take the earliest opportunity of presenting himself for admission at an Ordinary Meeting of the Society.

The manner of admission shall be thus:—

Immediately after the reading of the minutes, the Fellow elect, having first paid his subscription for the current year or his composition, shall sign the obligation contained in the Fellowship-book, to the effect following:—

"We, who have underwritten our "names, do hereby undertake, each for "himself, that we will endeavour to "further the good of the Royal Statis"tical Society for improving Statistical "Knowledge, and the ends for which "the same has been founded; that we "will be present at the Meetings of the "Society as often as conveniently we "can, and that we will keep and fulfil "the Bye-laws and Orders of this "Society: provided that whensoever "any one of us shall make known, by "writing under his hand, to the Secre"taries for the time being, that he "desires to withdraw from the Society, "he shall be free thenceforward from "this obligation."

Whereon the President, taking him by the hand, shall say,—"By the "authority, and in the name of the "Royal Statistical Society, I do admit "you a Fellow thereof."

Upon their admission Fellows shall have the right of attaching to their names the letters F.S.S., but not in connection with any trading or business advertisement other than the publication of any book or literary notice.

Admission of Honorary Fellows.

7. There shall be Two Meetings of the Society in the year, on such days as shall be hereafter fixed by the Council, at which Honorary Fellows may be elected.

No Honorary Fellow can be recommended for election but by the Council. At any Meeting of the Council any Member thereof may propose a Foreigner or British subject of distinction residing out of the United Kingdom, delivering at the same time a written statement of the qualifications of, offices held by, and published works of, the person proposed; and ten days' notice at least shall be given to every Member of the Council, of the day on which the Council will vote by ballot on the question whether they will recommend to the Society the election of the person proposed. No such recommendation to the Society shall be adopted unless at least three-fourths of the votes are in favour thereof.

Notice of the recommendation shall be given from the chair at the Meeting of the Society next preceding that at which the vote shall be taken thereon. No person shall be elected an Honorary Fellow unless sixteen Fellows vote and three-fourths of the Fellows voting be in his favour.

The Council shall have power to elect as Honorary Fellows, the Presidents for the time being of the Statistical Societies of Dublin, Manchester, and Paris, and the President of any other Statistical Society at home or abroad.

Payments by Fellows.

8. Every Fellow of the Society shall pay a yearly subscription of Two Guineas, or may at any time compound for his future yearly payments by paying at once the sum of Twenty Guineas.*

Defaulters.—Withdrawal of Fellows.

9. All yearly payments are due in advance on the 1st of January, and if any Fellow of the Society have not paid his subscription before the 1st of July, he shall be applied to in writing by the Secretaries, and if the same be not paid before the 1st of January of the second year, a written application shall again be made by the Secretaries, and the Fellow in arrear shall cease to receive the Society's publications, and shall not be entitled to any of the privileges of the Society until such arrears are paid; and if the subscription be not discharged before the 1st of February of the second year, the name of the Fellow thus in arrear shall be exhibited on a card suspended in the office of the Society; and if, at the next Annual General Meeting, the amount still remain unpaid, the defaulter shall, unless otherwise authorised by the Council, be announced to be no longer a Fellow of the Society, the reason for the same being at the same time assigned. No Fellow of the Society can withdraw his name from the Society's books, unless all arrears be paid; and no resignation will be deemed valid unless a written notice thereof be communicated to the Secretaries. No Fellow shall be entitled to vote at any Meeting of the Society until he shall have paid his subscription for the current year.

Expulsion of Fellows.

10. If any Fellow of the Society, or any Honorary Fellow, shall so demean himself that it would be for the dishonour of the Society that he longer continue to be a Fellow or Honorary Fellow thereof, the Council shall take the matter into consideration; and if the majority of the Members of the Council present at some Meeting (of which and of the matter in hand such Fellow or Honorary Fellow, and every Member of the Council, shall have due notice) shall decide by ballot to recommend that such Fellow or Honorary Fellow be expelled from the Society, the President shall at its next Ordinary Meeting announce to the Society the recommendation of the Council, and at the following Meeting the question shall be decided by ballot, and if at least three-fourths of the number voting are in favour of the expulsion, the President shall forthwith cancel the name in the Fellowship-book, and shall say,—

"By the authority and in the name "of the Royal Statistical Society, I do

---

* Cheques should be made payable to "The Royal Statistical Society," and crossed "Messrs. "Drummond and Co."

"declare that A. B. (naming him) is no "longer a Fellow (or Honorary Fellow) "thereof."

And such Fellow or Honorary Fellow shall thereupon cease to be of the Society.

Trustees.

11. The property of the Society may be vested in three Trustees, chosen by the Fellows. The Trustees are eligible to any other offices in the Society.

President, Council, and Officers.

12. The Council shall consist of a President and thirty Members, together with the Honorary Vice-Presidents.

From the Council shall be chosen four Vice-Presidents, a Treasurer, the Honorary Secretaries, and a Foreign Secretary, who may be one of the Honorary Secretaries. The former Presidents who are continuing Fellows of the Society shall be Honorary Vice-Presidents. Any five of the Council shall be a quorum.

Election of President and Officers.

13. The President, Members of Council, Treasurer, and Honorary and Foreign Secretaries shall be chosen annually by the Fellows at the Annual General Meeting.

The Vice-Presidents shall be chosen annually from the Council by the President.

The President shall not be eligible for the office more than two years in succession.

Six Fellows, at least, who were not of the Council of the previous year, shall be annually elected; and of the Members retiring three at least shall be those who have served longest continuously on the Council, unless they hold office as Treasurer or Honorary or Foreign Secretary.

Nomination of President, Council, and Officers.

14. The Council shall, previously to the Annual General Meeting, nominate, by ballot, the Fellows whom they recommend to be the next President and Council of the Society. They shall also recommend for election a Treasurer and the Secretaries (in accordance with Rule 12). Notice shall be sent to every Fellow whose residence is known to be within the limits of the metropolitan post, at least a fortnight before the Annual General Meeting, of the names of Fellows recommended by the Council.

Extraordinary Vacancies.

15. On any extraordinary vacancy occurring of the Office of President, or other Officer of the Society, the Honorary Secretaries shall summon the Council with as little delay as possible, and a majority of the Council, thereupon meeting in their usual place, shall, by ballot, and by a majority of those present, choose a new President, or other Officer of the Society, to be so until the next Annual General Meeting.

Committees.

16. The Council shall have power to appoint Committees of Fellows and also an Executive Committee of their own body. The Committees shall report their proceedings to the Council. No report shall be communicated to the Society except by the Council.

Auditors.

17. At the first Ordinary Meeting of each year, the Fellows shall choose two Fellows, not being Members of the Council, as Auditors, who, with one of the Council, chosen by the Council, shall audit the Treasurer's accounts for the past year, and report thereon to the Society, which report shall be presented at the Ordinary Meeting in February. The Auditors shall be empowered to examine into the particulars of all expenditure of the funds of the Society, and may report their opinion upon any part of it.

Meetings Ordinary and General.

18. The Ordinary Meetings of the Society shall be held monthly, or oftener, during the Session, which shall be from the 1st of November to the 1st of July in each year, both inclusive, on such days and at such hours as the Council shall declare. The Annual General Meeting shall be held on such day in the month of June of each year as shall be appointed by the Council for the time being.

Business of Ordinary Meetings.

19. The business of the Ordinary Meetings shall be to elect and admit Fellows, to read and hear reports, letters, and papers on subjects interesting to the Society. Nothing relating to the bye-laws or management of the Society shall be discussed at the Ordinary Meetings, except that the Auditors' Report shall be presented at the Ordinary Meeting in February, and that the Minutes of the Annual General Meeting, and of every Special General Meeting, shall be submitted for confirmation at the next Ordinary Meeting after the day of such Annual or Special General Meeting. Strangers may be introduced to the Ordinary Meetings, by any Fellow, with the leave of the President, Vice-President, or other Fellow presiding at the Meeting.

Business of Annual General Meeting.

20. The business of the Annual General Meeting shall be to elect the Officers of the Society, and to discuss questions on its bye-laws and management. No Fellow or Honorary Fellow shall be proposed at the Annual General Meeting. No Fellow shall propose any alteration of the rules or bye-laws of the Society at the Annual General Meeting, unless after three weeks' notice thereof given in writing to the Council, but amendments to any motion may be brought forward without notice, so that they relate to the same subject as the motion. The Council shall give fourteen days' notice to every Fellow of all questions of which such notice shall have been given to them.

Special General Meetings.

21. The Council may, at any time, call a Special General Meeting of the Society when it appears to them necessary. Any twenty Fellows may require a Special General Meeting to be called, by notice in writing signed by them, delivered to one of the Secretaries, specifying the questions to be moved. The Council shall, within one week of such notice, appoint a day for such Special General Meeting, and shall give at least one week's notice of every Special General Meeting, and of the questions to be moved, to every Fellow within the limits of the metropolitan post, whose residence is known. No business shall be brought forward at any Special General Meeting other than that specified in the notice convening the same.

Duties of the President.

22. The President shall preside at all Meetings of the Society, Council, and Committees, which he shall attend, and in case of an equality of votes, shall have a second or casting vote. He shall sign all diplomas of admission of Honorary Fellows. He shall admit and expel Fellows and Honorary Fellows, according to the bye-laws of the Society.

Duties of the Treasurer.

23. The Treasurer shall receive all moneys due to, and pay all moneys owing by, the Society, and shall keep an account of his receipts and payments. No sum exceeding Ten Pounds shall be paid but by order of the Council, excepting always any lawful demand for rates or taxes. The Treasurer shall invest the moneys of the Society in such manner as the Council shall from time to time direct.

Duties of the Honorary Secretaries.

24. The Honorary Secretaries shall, under the control of the Council, conduct the correspondence of the Society; they or one of them shall attend all Meetings of the Society and Council, and shall duly record the Minutes of the Proceedings. They shall issue the requisite notices, and read such papers to the Society as the Council may direct.

Powers of the Vice-Presidents.

25. A Vice-President, whether Honorary or nominated, in the chair, shall act with the power of the President in presiding and voting at any Meeting of the Society or Council, and in admitting Fellows; but no Vice-President shall be empowered to sign diplomas of admission of Honorary Fellows, or to expel Fellows or Honorary Fellows. In the absence of the President and Vice-Presidents, any Member of Council may be called upon by the Fellows then present, to preside at an Ordinary or Council Meeting, with the same power as a Vice-President.

Powers of the Council.

26. The Council shall have control over the papers and funds of the Society, and may, as they shall see fit, direct the publication of papers and the expenditure of the funds, in accordance with the provisions of the Charter.

27. The Council shall be empowered at any time to frame Regulations not inconsistent with these bye-laws, which shall be and remain in force until the next Annual General Meeting, at which they shall be either affirmed or annulled; but no Council shall have power to renew Regulations which have once been disapproved at an Annual General Meeting.

28. The Council shall have the custody of the Common Seal. The Common Seal shall not be affixed to any instrument, deed, or other document, except by order of the Council and in the presence of at least two Members of the Council, and in accordance with such other regulations as the Council shall from time to time prescribe. The fact of the seal having been so affixed shall be entered on the minutes of the Council.

29. No Dividend, Gift, Division, or Bonus in money shall be made by the Society, unto or between any of the Fellows or Members, except as hereinafter provided.

30. The Council shall publish a Journal of the Transactions of the Society, and such other Statistical Publications as they may determine upon, and may from time to time pay such sums to Editors and their assistants, whether Fellows of the Society or not, as may be deemed advisable.

31. All communications to the Society are the property of the Society, unless the Council allow the right of property to be specially reserved by the Contributors.

REGULATIONS OF THE LIBRARY.

1. The Library is open daily from 10 a.m. till 5 p.m., except on Saturdays, when it closes at 2 p.m.; and it is entirely closed during the month of September, but Books required by Members can be obtained on application.

2. Members of the Society are permitted to take out Books on making personal application, or by letter addressed to the Librarian.

3. Members are not to have more than two works at a time, nor keep any books longer than a month.

4. Scientific Journals and Periodicals are not circulated until the volumes are completed and bound.

5. Cyclopædias and works of reference are not circulated, but may be lent only on the written order of an Honorary Secretary for a period not exceeding seven days. And if works so lent be not returned within the specified time, the borrower shall incur a fine of one shilling per day per volume for each day they are detained beyond the time specified.

6. Any Member damaging a book, either replaces the work, or pays a fine equivalent to its value.

7. Books taken from the shelves for reference, are *not* to be replaced, but must be laid on the Library table.

8. The Secretary shall report to the Council any infringement of these regulations, and lay upon the table at each regular Meeting (*a*) a List of any "Works of Reference," that may have been borrowed and (*b*) a List of Books that have been out more than a month.

DONORS TO THE LIBRARY.

During the Year 1888.

Foreign Countries.

Argentine Republic.
Austria and Hungary.
Belgium.
Bulgaria.
China.
Denmark.
Egypt.
France.
Greece.
Guatemala.
Germany.
Saxony.
Prussia.
Italy.
Japan.
Mexico.
Netherlands.
Paraguay.
Roumania.
Russia.
Spain.
Switzerland.
Sweden and Norway.
Federal Government of the United States—
  Connecticut.
  Illinois.
  Massachusetts.
  Michigan.
  New York.
  Rhode Island.
  Wisconsin.
Uruguay.
Venezuela.

Indian, Colonial, and other Possessions.

Bengal.
Canada. *Dominion of.*
Cape of Good Hope.
India (British).
Jamaica.
Manitoba.
Mauritius.
New South Wales.
 „ Zealand.
Queensland.
South Australia.
Tasmania.
Trinidad.
Victoria.

Public Departments.

The Admiralty Medical Department.
 „ Agricultural Department.
 „ Army Medical Department.
 „ Board of Trade.
 „ British Museum.
 „ Customs, H.M.
 „ Fire Brigade, Metropolitan
 „ Foreign Office.
 „ Home Office.
 „ India Office.
The Inland Revenue.
 „ Local Government Board.
 „ Metropolitan Asylums Board.
 „ „ Board of Works.
 „ „ Police.
 „ Registrar-General of England.
 „ „ „ Ireland.
 „ „ „ Scotland.
 „ Royal Mint.
 „ Woods, Forests, &c., H.M.

During the Year 1888—*Contd.*

Actuaries, The Institute of.
Agriculture, Central Chamber of.
Allen, W. H., & Co., London.
American—
  Academy of Arts and Sciences, Boston.
  Economic Association, Baltimore.
  Geographical Society, New York.
  Philosophical Soc. of Philadelphia.
  Statistical Association, Boston.
Archiv für Soziale Gesetzgebung, &c., The Editor.
Argentine Legation, London.
Argentine Republic—
  The Statistical Bureau.
  Buenos Ayres, Statistical Bureau.
Arts, Society of, London.
Asiatic Society of Bengal.
" " Japan.
Association of Chambers of Commerce of the United Kingdom.
Astor Library, New York U.S.A.
Athenæum, The Editor of, London.
Australian Economic Association.
Austria and Hungary—
  Statistical Commission.
  Ministry of Commerce.
  Hungarian Statistical Bureau.
  Agram, Chamber of Commerce.
  Budapest, Statistical Bureau of.
  Prague, Statistical Bureau of.

Baker, Dr. H. B., Lansing, U.S.A.
Balfour, Dr. T. Graham, F.R.S., London.
Bankers' Institute, London.
" Magazine, London.
" " New York.
Barbera, M. G., Firenze.
Bastable, C. F., Esq.
Bateman, A. E., Esq., London.
Beggs, Thomas, Esq., London.
Belgium—
  Bureau of General Statistics.
  Administration of Mines.
  Royal Academy of Sciences.
  Bruges, The Burgomaster of.
  Brussels, The Bureau of Hygiene.
Benham, R. S., Esq., Adelaide.
Bertillon, Dr. J., Paris.
Billings, Dr. J. S., Washington.
Bi-Metallic League, London.
Boccardo, M. G., Rome.
Blackwood, Messrs., Edinburgh.
Birt, W., Esq., London.
Bodio, Professor Luigi, Rome.
Boissevain, M. G. M., Amsterdam.
Bolles, Albert S., Esq., New York.
Bonar, James, Esq., London.
Booth, Charles, Esq., London.
Bourinot, J. G., Esq., Ottawa.
Bourne, S., Esq., London.
Bourne, William, Esq., Liverpool.
Boutcher, Mortimer, & Co., London
Brachelli, Dr. H. F., Vienna.
Bradford Economic and Statistical Society.
Bradstreet's Journal, The Editor of.
British Association, The.
" Iron Trade Association.
Brookes & Green, London.
Brown, Prof. M., New Zealand.
Buchanan, Dr. George, London.
Builders' Institute, London.
Building Societies, &c., Gazette.
Bulgarian Statistical Bureau.
Burch, N. G., Esq., London.

Canada—
  Royal Society of.
  Manitoba Department of Agriculture.
Cape of Good Hope, Colonial Sec.
Carmichael, C. H. E., Esq., London.
Carter, J. R., Esq., London.

During the Year 1888—*Contd.*

Cavalieri, M. E., Rome.
Chinese Imperial Maritime Customs.
Civil Engineers, Institution of.
Clark, H. J., Esq., Trinidad.
Cobden Club, the Committee of.
Colmer, J. G., Esq., C.M.G., London.
Colombia College, New York.
Commercial and Financial Chronicle of New York.
Commercial World, The Editor of.
Coni, Dr. E. R., Buenos Ayres.
Conrad, Prof. J., Halle.
Co-operative Wholesale Society.
Cooke-Taylor, R. W., Esq.
Craigie, Major P. G., London.

Danvers, F. C., Esq., London.
Dawson Bros., Messrs., Montreal.
Day, S., Esq., London Hospital.
Danish Statistical Bureau.
„ Political Economy Society.
Denis, Prof. H., Brussels.
Dewey, D. R., Esq., Boston.
Dublin Commissioner of Police.
Durant & Co., Messrs., London.

East India Association, London.
Eaton & Sons, London.
Economist, The Editor of, London.
Economista, The Editor of, Florence.
Économiste Français, Editor of, Paris.
Edinburgh, The City Chamberlain.
„ Royal Society of.
Egypt, Director-General of Customs.
Ellis, G. H., Esq., Boston.
Elliott, T. H., Esq., London.
Ellison & Co., Messrs., Liverpool.

Faculty of Actuaries in Scotland.
Farrer, Sir T. H., London.
Fenton, J. J., Esq., Melbourne.
Finance Chronicle, The Editor of.
Fireman, The, The Editor.
Fischer, Gustav, Esq., Jena.
Flaix, M. E. F. de, Paris.
Fleming, Dr. G., London.
Ford, W. C., Esq., Washington.
Foster, Joseph, Esq., London.
Foville, M. A. de, Paris.
Foxwell, Prof. H. S., Cambridge.
Frankland, F. W., Esq., Wellington.
Franklin Institute, Philadelphia.
Freemantle, Hon. C. W., C.B., London.

France—
- Ministry of Agriculture.
  - „ Commerce.
  - „ Justice.
  - „ Public Works.
- Paris, Statistical Bureau of.
  - „ Statistical Society of.
  - „ École Libre des Sciences Politiques.
- Reims, Bureau of Hygiene.

Germany—
- Imperial Statistical Bureau.
- Prussian Royal Statistical Bureau.
- Saxony, Royal Statistical Bureau.
- Berlin, Statistical Bureau of.
- Frankfort Geographical and Statistical Society.
  - „ Statistical Bureau of.
- Hamburg Chamber of Commerce.
  - „ Statistical Bureau of.
- Railway Association.

Galarce, A., Esq., Buenos Ayres.
Giornale degli Economisti, The Editor of—, Bologna.
Glasgow, The Mitchell Library.
„ Philosophical Society of.
Gonner, Prof. E. C. K., Liverpool.
Gooch & Cousens, London.

During the Year 1888—*Contd.*

Greece, Statistical Bureau of.
Guatemala, Statistical Bureau of.
Guillaumin & Co., Messrs., Paris.
Guyot, M. Yves, Paris.

Haggard, Frederick T., Esq., Tunbridge Wells.
Harris, W. A., Esq., Liverpool.
Hart, Sir Robt., K.C.M.G., Peking.
Hayter, H. Heylyn, Esq., C.M.G., Melbourne, Victoria.
Hector, Sir James, K.C.M.G., F.R.S., Wellington, New Zealand.
Hewat, A., Esq., Edinburgh.
Hoar, Hon. G. F., Washington.
Howard Association, London.
Howard, James, Esq., Bedford.
Hudson, Thomas, Esq., London.

Inàma-Sternegg, Dr. K. T., Vienna.
Index Society, London.
Indian Department of Finance.
Insurance and Finance Chronicle, The Editor of, Montreal.
Insurance Gazette, The Editor of.
„ Post, The Editor of.
„ Record, The Editor of.
International Statistical Institute.
Investors' Monthly Manual, The.
Iron and Coal Trades' Review, The.
Italy—
Bureau of General Statistics.
Director General of Agriculture.

Jamaica, The Registrar-General of.
Janssens, Dr. E., Brussels.
Japan—
Bureau of General Statistics.
Tokyo, Statistical Society of.
Imperial University.
Jeans, J. S., Esq., London.
Jenkins, F. L., Esq., Brooklyn.
Johnson, G., Esq., Ottawa.
Jones, Benjamin, Mr., London.
Jourdan, Francis, Esq., London.
Jouy, J. H. B. de, Esq., Paris.
Just, A. F., Esq., London.

Keleti, Dr. C., Vienna.
Kelly, Charles, Esq., M.D., F.R.C.P.
Keltie, J. S., Esq., London.
Kennedy, C. M., Esq., C.B., London.
Koenig, Prof., Berne.
Kőrösi, Joseph, Esq., Budapest.

Lawson, R., Esq., London.
Lee, Sir Joseph C., Manchester.
Levasseur, M. Emile, Paris.
Levi, Mrs. Leone, London.
Littledale, Ragg, & Co., Liverpool.
Liverpool, Lit. and Phil. Society.
„ Free Public Library.
Local Taxation Committee, London.
London Chamber of Commerce.
„ Hospital, The Secretary.
„ Library.
Luckie, D. M., Esq., Wellington, N.Z.

MacDowall, A. B., Esq., London.
McDonnell, W. D., Esq., London.
Machinery Market, Editor of.
Macmillan & Co., Messrs., London
McNiel, H., Esq., Manchester.
Madison State Board of Health, Wisconsin.
Manchester—
Literary and Philosophical Soc.
Public Free Library.
Statistical Society of.
Mauritius Almanac, &c., Editor of.
„ The Officer administering the Government.

During the Year 1888—*Contd.*

Mechanical Engineers, Institution of, London.
Medical Officer of Health, London.
Mexican Statistical Bureau.
„ Legation, London.
Merriman, Hon. J. X., Cape Town.
Middlesex Hospital, London.
Millar, R. C., Esq., Edinburgh.
Mitchell Library, Glasgow.
Molloy, W. R. J., Esq., Dublin.
Money, The Editor of, London.
Moss & Co., R. J., Alexandria.
Mouat, Dr. F. J., LL.D., London.
Mulhall, M. G., Esq., London.

Nature, The Editor of, London.
Netherlands—
  Department of the Interior.
  Legation, London.
  Statistical Institute of.
New South Wales—
  Agent-General for, London.
  Government Statist of, Sydney.
  Registrar-General of, Sydney.
New Zealand—
  Registrar-General of.
  Minister of Mines.
  Agent-General for.
Nicholson, F. A., Esq., India.
Nicolai, M. E., Brussels.
Norfolk, E. W., Esq., London.
Norman, General Sir H., Jamaica.
Norwegian Central Statistical Bureau, Christiania.

O'Conor, J. E., Esq., Calcutta.

Page & Gwyther, London.
Paraguay, Statistical Bureau of.
Peabody Donation Fund, London.
Peck, Charles F., Esq., New York.
Peek, Sir Henry, London.
Petersen, Aleksis, Esq., Copenhagen.
Pierrard, Paul, Esq., London.
Pixley & Abell, Messrs., London.
Platt, James, Esq., London.
Policy-Holder, Editor of.
Political Science Quarterly, U.S.A.
Powell, Messrs. T. J. and T.
Purvis, Gilbert, Esq., London.

Quarterly Journal of Economics, The Editor, Boston, U.S.A.
Queensland, Registrar-General of.

Rabino, J., Esq., Alexandria.
Rae, George, Esq., Birkenhead.
Raffalovich, M. A., Paris.
Review, The Editor of, London.
Revue Bibliographique Universelle, The Editor of, Paris.
Revue de l'Economie Politique, The Editor of, Paris.
Revue Géographique Internationale, The Editor of, Paris.
Ronald & Sons, Messrs., Liverpool.
Ross, A., Esq., Valparaiso.
Roth, H. Ling, Esq., Leeds.
Roumanian Central Statistical Bureau.
Royal Agricultural Society.
„ Asiatic Society, London.
„ „ Bombay Branch.
„ „ China „
„ College of Surgeons.
„ „ „ in Ireland.
„ Colonial Institute.
„ Geographical Society.
„ Institution of Great Britain.
„ Irish Academy.
„ Med. and Chirurgical Society.
„ Society, London.
„ United Service Institution.

During the Year 1888—*Contd.*

Russia—
  Central Statistical Committee.
  Department of Agriculture.
  „ Customs.
  Ministry of Finance.
  Tchernigov Provincial Board.

St. Bartholomew's Hospital, London.
Sandberg, C. P., Esq., London.
Sanitary Record, London.
Sargant, W. L., Esq., Birmingham.
Scientific News, The Editor, London.
Shaw, Capt. E. M., C.B., London.
Shillito, J., Esq., York.
Shipping World, The Editor.
Smee, A. H., Esq., London.
Smith, Dr. George, Edinburgh.
Smith, R. M., Esq., U.S.A.
Smithsonian Institution, U.S.A.
Snow, Dr. E. M., Providence, R.I.
Society of Accountants & Auditors.
Solomon, The Hon. M., Jamaica.
Spain—
  Board of Customs.
  Geographical & Stat. Institute.
  Geographical Society of Madrid.
Statist, The Editor of, London.
Statistical and Social Inquiry Society of Ireland, Dublin.
Strachan, T. Y., Esq., London.
Street Bros., Messrs., London.
Surveyors' Institution, The, London.
Swedish Central Statistical Bureau.
Switzerland—
  The Federal Assurance Bureau.
  „ Statistical Bureau.
  „ Depart. of Customs.
  The Statistical Society.
  Geneva Public Library.
  Statistical Bureau of Canton Aargau.

Tasmania, Government Statist of.
„ Royal Society of
Thompson, W. J. and H., London.
Tomalin, L. R. S., Esq., London.
Treatt, Frank B., Esq., Sydney.
Trinidad, The Registrar-General of.
Trübner and Co., Messrs., London.
Trustees of the British Museum.

United States—
  Bureau of Education.
  Commissioner of Labor.
  Comptroller of the Currency.
  Department of Agriculture.
  Department of State.
  Surgeon-General, U. States Army.
  Treasury Department.
  Illinois Bureau of Labor Statistics.
  Massachusetts, Board of Health, Lunacy, and Charity.
  Massachusetts Bureau of Statistics of Labor.
  Michigan State Board of Health.
  New York State Library, U.S.A.
  „ Museum.
  „ Bureau of Labor Statistics.
  Rhode Island, Registrar of Providence.
  Wisconsin State Board of Health.
University College, London.
Urmson, Elliott, & Co., Liverpool.
Uruguay, Bureau of Statistics.
„ Consul General, London.

Van de Linde, G., Esq., London.
Venezuela, Statistical Bureau of.

During the Year 1888—*Contd.*

Venezuela, Consul for, London.
Vessélovsky, A., Esq., St. Petersburg.
Victoria, Department of Mines.
„ Agent General, London
„ Royal Society of.
Vincent, Sir Edgar, K.C.M.G., Cairo.

Wemyss, The Right Hon. The Earl of, London.
Walras, M. Leon, Switzerland.
Wandsworth Board of Works.
„ Public Library.
Weeks, J. D., Esq., U.S.A.
Westgarth, W., Esq., London.
Woolston & Beeton, London.
Worsfold, W. B., Esq., New Zealand
Wright, Hon. C. D., Boston, Mass.

ROYAL STATISTICAL SOCIETY.

REPORT OF THE COUNCIL

For the Financial Year *ended* 31*st December*, 1887, *and for the* Sessional Year *ending* 26*th June*, 1888, *presented at the* Fifty-Fourth Annual General Meeting *of the* Royal Statistical Society, *held at the Society's Rooms*, 9, *Adelphi Terrace*, *Strand*, *London*, *on the* 26*th of June*, 1888.

C. M. Kennedy, Esq., C.B., a Vice-President, *in the Chair*.

The Council have the honour to submit their Fifty-Fourth Annual Report.

The roll of Fellows on the 31st December last compares as follows with the average of the previous ten years:—

Particulars.	1887.	Average for the Previous Ten Years.
Number of Fellows on 31st December	977	825
Life Members included in the above	160	132
Number lost by death, withdrawal, or default	59	52
New Fellows elected (and one resignation cancelled)	93	85

Since the 1st January last, 75 new Fellows have been elected, making the present number 1,033.

The financial condition of the Society continues to be satisfactory. The following table gives, for purposes of comparison, the different sources of ordinary income for the year 1887, together with the same particulars for the previous five years:—

Receipts per	1887.	1886.	1885.	1884.	1883.	1882.	Average for the Five Years previous to 1887.
	£	£	£	£	£	£	£
Dividends	73	73	73	88	102	94	86
Annual Subscriptions	1,621	1,583	1,462	1,447	1,361	1,291	1,429
Compositions	126	231	63	294	126	189	181
Journal sales	188	180	188	207	150	227	190
Advertisements in Journal	21	19	26	19	35	37	27
Miscellaneous refunds	—	—	—	84	4	—	—
	2,029	2,086	1,812	2,139	1,778	1,838	1,913
Legacy of Dr. Guy	—	—	250	—	—	—	—
Mr. Pochin's Prize for the Newmarch Memorial Essay	—	—	—	—	—	100	—
Sale of 1,000*l.* New 3 per Cent. Stock	—	—	—	1,007	—	—	—
	—	—	2,062	3,146	—	1,938	—

On the other hand, the expenditure has been as follows:—

Expenditure for	1887.	1886.	1885.	1884.	1883.	1882.	Average for the Five Years previous to 1887.
	£	£	£	£	£	£	£
Rent, rates, and taxes	237	227	310*	56	80	83	151
Fire, lights, and water, repairs, furniture, &c.	81	72	88	—	77	56	59
Salaries, wages, and pension	419	420	392	394	381	362	390
Advertising, postage & delivery of Journals, stationery, & sundry printing	209	256	241	248	222	191	232
Ordinary meeting Expenses	39	24	23	24	32	26	26
Journal	609	735	625	645	585	553	629
Library	87	32	27	38	49	60	41
Miscellaneous	64	76	50	65	61	54	61
	1,745	1,842	1,756	1,470	1,487	1,385	1,589
Catalogue and Index to Library	280	31	247	392	128	153	—
Newmarch Memorial Fund	—	—	—	—	—	21	—
Removing to 9, Adelphi Terrace	—	—	67	1,203	—	—	—
Mr. Pochin's Prize for the Newmarch Memorial Essay	—	—	100	—	—	—	—
Howard Medal Prize Essays	—	—	—	23	20	22	—
Jubilee Volume	—	233	—	—	—	—	—
Charter	110	—	—	—	—	—	—
	2,135	2,106	2,170	3,088	1,635	1,581	—

---

* Of this sum about 114*l.* belongs to the expenditure of 1884.

A comparison of the principal figures at intervals of ten years in the following table, will show the progress of the Society from an early date:—

Comparison of the Condition of the Society at Intervals of Ten Years, on 31st December.

Year.	Number of Fellows.	Ordinary		Amount Invested.	Liabilities.	Assets over Liabilities.	Year.
		Income.	Expenditure.				
		£	£	£	£	£	
1837 ...	390	738	887	899	11	890	1837
'47	412	756	828	899	255	1,022	'47
'57 ...	394	869	755	899	122	1,634	'57
'67	371	778	831	1,043	97	1,822	'67
'77	683	1,597	1,286	1,398	201	3,562	'77
'87	977	2,029	1,745	2,500	624	5,268	'87

The following table gives the particulars for each year of the last decade on 31st December:—

Year.	Number of Fellows.	Ordinary Income.	Expenditure.	Amount Invested.	Liabilities.	Assets over Liabilities.	Year.
		£	£	£	£	£	
1878	746	1,732	1,345	1,902	168	4,147	1878
'79 ...	783	1,698	1,427	2,283	238	4,433	'79
'80 ...	808	1,902	1,517†	2,572	214	4,614	'80
'81	807	1,649	1,400	2,869	192	4,935	'81
'82	786	1,838	1,581‡	3,071	203	5,240	'82
'83	860	1,778	1,635‡	3,500	347	5,246	'83
'84	909	2,139	3,087*‡	2,500	968	4,188	'84
'85	928	1,812	2,170*‡§	2,500	1,169	3,791	'85
'86	943	2,086	2,106‡‖	2,500	741	5,163	'86
'87	977	2,029	2,135‡¶	2,500	624	5,268	'87

* Affected by expenses incident to moving into new premises.

† Affected by expenses attending the alteration, &c., of the meeting room at King's College.

‡ Affected by expenses attending the preparation of the new Catalogue and Index to the library.

§ Includes 100*l.* given by Mr. H. D. Pochin for the Newmarch Memorial Prize Essay.

‖ Includes balance of cost of Jubilee volume.

¶ Affected by special outlay for the Charter.

The averages of the annual sales of the Society's *Journal* are as follows:—

	£
For the ten years 1841-50	56
„ '51-60	83
„ '61-70	97
„ '71-80	155
For the last seven years '81-87	184

The Society re-assembled in December, and the papers read and the members elected at each of the monthly meetings were as follows:—

SESSION 1887-88.

First Ordinary Meeting, Tuesday, 6th December, 1887,

HELD AT WILLIS'S ROOMS.

The President, THE RIGHT HON. G. J. GOSCHEN, M.P., Chancellor of the Exchequer, in the Chair.

The following were elected Fellows:—

Alfred Baldwin, J.P.
Francis Bolling.
Edward Bond.
Robert Capper.
R. Whately Cooke-Taylor.
H. de Ricci.
J. J. Fenton.
T. Freeman, junr.
George J. Gribble.
Thomas Hamilton, J.P.
Leonard F. Harrold.
Ralph Heap, junr.
John Hopkins.
Henry Barry Hyde.
John Walter Jones.
Angus Macmillan, M.D.
Maurice Makower.
Frank R. Malleson.
James S. Mann, M.A.
W. E. Mann.
David Marks.
W. Bayley Marshall.
James Martin.
Arthur Chisholm Moore.
George R. O'Galligan.
Richard M. Pankhurst, LL.D.
Archibald Parker.
William Percival.
Colonel A. Phelps.
Charles H. Phillips.
Leslie Charles Probyn.
Arthur Herbert Roberts.
Henry James Robinson.
Thomas Russell, C.M.G.
Alfred Louis Sacré.
David A. Shennan,
Major-General C. Sim.
Joseph Smith.
Arthur Henry Snell.
Robert Muter Stewart.
William Edward Thomson.
George Tunley.
C. E. Howard Vincent, M.P., C.B.
Thomas Wardle.
Frederick Whinney.
Rev. George Cecil White, M.A.
George Charles Williamson.
Coventry Archer Woodhouse.
A. W. Worthington, B.A.
William Ernest Wright.

The President delivered an Inaugural Address upon "The "Increase of Moderate Incomes."

A cordial vote of thanks to the President for his Address was moved by Sir R. W. Rawson, seconded by Mr. M. W. Collet, and supported by Sir James Caird.

Second Ordinary Meeting, Tuesday, 20th December, 1887.

Dr. T. Graham Balfour, F.R.S., a Vice-President, in the Chair.

The following were elected Fellows:—

Joseph Howard Barnes.
Harry Pearson Brocklesby.
Edward Simpson Byrne.
Charles H. E. Carmichael.
Nathaniel Lewis Cohen.
Mark Wilks Collet.
Frederick William Frankland.
John Howard Gwyther.
Donald Carmichael Haldeman.
Edward W. Hamilton, C.B.
William A. Harris.
Somerset William D'Arcy Irvine.
Alexander Leitch.
Herman Le Roy-Lewis, B.A.
Andrew J. Macdonald.
Walter Charles G. Macpherson.
Leveson Edward Scarth, M.A.
Edward Seaton, M.D.
John Thomas.
George Wreford.

Sir Juland Danvers, K.C.S.I., read a Paper on "The Defects of "English Railway Statistics."

In the discussion that followed the undermentioned took part:—Mr. G. Baden-Powell, M.P., Mr. C. R. Haig, Mr. R. Price-Williams, Sir A. M. Rendel, Mr. E. H. Carbutt, Major-General E. C. S. Williams, C.S.I., Mr. H. Oakley, Mr. Edmund Kimber, and Mr. H. Tennant.

Third Ordinary Meeting, Tuesday, 17th January, 1888.

Frederick Hendriks, Esq., F.I.A., a Vice-President, in the Chair.

The following were elected Fellows:—

G. R. Benson.
Edward Hamer Carbutt.
Rev. S. Thorn Gwilliam, B.A.
James Howard.
James McCankie.
William Robert Molloy.
John Morris.
James Pollard.
Joshua Shillcock, B.A.
William Wade Wartnaby.
John T. Wills, B.A.

Mr. Benjamin Jones read a Paper on "Progress, Organisation, "and Aims of Working Class Co-operators."

The undermentioned took part in the discussion that followed:—Mr. E. Vansittart Neale, Mr. G. J. Holyoake, Rev. Isaac Doxsey, Professor H. S. Foxwell, Mr. S. Bourne, Mr. George Seton, Major P. G. Craigie, Mr. H. G. Rawson, and Mr. F. Hendriks (the Chairman).

Fourth Ordinary Meeting, Tuesday, 21st February, 1888.

Frederick Hendriks, Esq., F.I.A., a Vice-President, in the Chair.

The following were elected Fellows:—

Thomas Acheson Bellew.
George James Crosbie Dawson.
Reginald Embleton Emson.
Arthur Richard Farlow.
Henry Fisher, J.P.
Herbert Lloyd Reid.
Colonel the Hon. W. Le Poer Trench.
Henry Ward.
Henry Barlow Webb.
Alderman James Whitehead.
Thomas Rodriques Woolfe.
William Basil Worsfold, M.A.

Mr. Joseph G. Colmer read a Paper on "Some Canadian Railway and Commercial Statistics."

A discussion followed, in which the undermentioned took part: —Mr. W. Leigh Bernard, Sir G. Baden-Powell, M.P., Mr. F. Sharp Powell, M.P., Mr. James Mosse, Mr. T. H. Elliott, Mr. F. Hendriks (the Chairman), and Mr. S. Bourne.

Fifth Ordinary Meeting, Tuesday, 20th March, 1888.

ROBERT GIFFEN, Esq., LL.D., a Past-President, in the Chair.

The following were elected Fellows:—

A. H. Dyke Acland, M.A., M.P.
Richard William Binns, F.S.A.
George Bottomley.
W. W. Clapham.
Henry W. Elliott.
Sir William B. Forwood, J.P.
Thomas Ironmonger, J.P.
John Ridgway, J.P.
William Henry Verdin, J.P.
Rev. Harry Vian-Williams.

Mr. Arthur Ellis read a Paper on "The Quantitation of Stock Exchange Values."

In the discussion that ensued the following took part:— Mr. F. Hendriks, Mr. H. M. Paul, Mr. Rowland Hamilton, Mr. John Glover, Mr. F. F. Begg, Mr. T. H. Elliott, Sir Rawson W. Rawson, Mr. J. E. Matthews, and Mr. Robert Giffen (the Chairman).

Sixth Ordinary Meeting, Tuesday, 17th April, 1888.

Dr. T. GRAHAM BALFOUR, F.R.S., a Vice-President, in the Chair.

The following were elected Fellows:—

Ebenezer J. Barton.
Arthur Knatchbull Connell.
Hon. N. De L'Aigle Grosvenor.
Alfred Hill, J.P.
Henry Oakley.
William Henry Perratt.
The Hon. Mr. Justice Pinhey, J.P.
Sir David Radcliffe, J.P:
Charles Scotter.

Mr. R. H. Inglis Palgrave, F.R.S., read a Paper on "Progressive Taxation as Levied in Switzerland—Cantons Basel-Stadt, de Vaud, and Uri."

The undermentioned took part in the discussion that followed: —Mr. F. Hendriks, Mr. F. B. Garnett, C.B., Mr. H. Vernet, Mr. T. H. Elliott, Mr. S. Bourne, Sir Rawson W. Rawson, Mr. F. Sharp Powell, M.P., and Mr. E. J. Hardcastle.

Seventh Ordinary Meeting, Tuesday, 15*th May,* 1888.

Dr. T. Graham Balfour, F.R.S., a Vice-President, in the Chair.

The following were elected Fellows:—

John W. Batten.
Henry F. Billinghurst.
Sir F. J. Bramwell, D.C.L., F.R.S.
William A. Byrom.
Ebenezer Carr.
Frederick H. Collison.
Jacob Earnshaw.
J. C. Eckersley, M.A., F.R.G.S.
Edmund Ernest Finckenstadt.
Joseph S. Green.
Robert Hammond.
John King.
Sir James Kitson, Bart., J.P.
W. F. Narraway.
George Rae.
Thomas William Read.
Thomas Rushton.
Thomas G. Shuttleworth.
Francis William Slade.
Walter J. Smith.
Theodore Cooke Taylor, J.P.
D. A. Thomas, M.P.
Frederic Walmsley.
John W. Williamson.

Mr. Charles Booth read a paper on "The Condition and Occupations of the People of East London and Hackney, 1887."

In the discussion that followed the undermentioned took part:—Mr. F. Scott, Mr. R. Giffen, Mr. S. Dana Horton, Sir Rawson W. Rawson, Mr. C. S. Loch, Mr. J. B. Lakeman, Rev. F. W. Lawrence, Mr. E. H. Carbutt, Mr. J. M. Mathias, Mr. T. E. Kerrigan, Mr. F. Sharp Powell, M.P., Mr. D. F. Schloss, Mrs. Amie Hicks, and Dr. Graham Balfour (the Chairman).

Eighth Ordinary Meeting, Tuesday, 19*th June,* 1888.

Dr. T. Graham Balfour, F.R.S., a Vice-President, in the Chair.

The following were elected Fellows:—

Thomas G. Ackland.
Frederick W. Bartlett.
John Evans.
Walter Newton Fisher.
Thomas Eli Gibson.
James Manuel.
John T. Trotter.
John Williams.
Robert Williams, junr.

Major P. G. Craigie read a Paper on "The English Poor Rate: some Recent Statistics of its Administration and Pressure."

A discussion followed, in which the undermentioned took part:—Mr. Edwin Chadwick, C.B., Mr. Stanley Leighton, M.P., Mr. W. J. Harris, Mr. C. M. Kennedy, C.B., Mr. J. A. Fletcher, Sir Rawson W. Rawson, Mr. S. Bourne, and the Chairman.

The Council record with satisfaction that the anticipation expressed in their last report, that the number of members of the Society would again show an increase during the present year, has been fully realised. At the opening meeting of the session the President announced that the total number of members of the Society was higher than on any previous occasion; and at the Ordinary Meeting on 17th April, the Chairman was able to congratulate the Society on the fact that for the first time in its history the number of Ordinary Fellows exceeded 1,000. None the less the Council would urge on all Fellows of the Society the importance of using their best efforts to increase still further its numerical strength, and to augment its efficiency in the promotion of the purposes for which it was instituted.

The income of the Society in 1887 was of the ordinary character, exhibiting a slight increase under all heads except that of compositions for life membership. The ordinary expenditure was also of a normal character. The expenses of the Ordinary Meetings show an increase in respect of the expenditure that was entailed by holding the meeting at Willis's Rooms, on the occasion of the President's Inaugural Address. The extraordinary expenditure has been incurred in connection with the Charter and in closing the account of the Index to the Library Catalogue.

As mentioned in the last report, the Institute of Actuaries have vacated the portion of the Society's premises hitherto occupied by them. The back portion of the first floor has been let to Mrs. E. L. Blanchard as an office for the "Colonial Emigration Society." The remaining portion of the premises is now available to the Fellows of the Society; and the Council desire to call their attention to the increased accommodation that is now at the disposal of those who wish to make use of the Library. Special regulations have been framed for enabling the Fellows, under certain restrictions, to take out from the Library books of reference and similar works that may be required in the preparation of papers or otherwise.

Permission to hold the Ordinary Meetings of the Society in the Theatre of the School of Mines in Jermyn Street has been continued to the Society through the courtesy of the Education Department, and the Council have again conveyed to the Lords of the Committee of Council on Education their thanks for the accommodation thus afforded to the Society.

The first meeting of the session was postponed to the 6th December, to meet the convenience of the President (the Chancellor of the Exchequer). In order to accommodate the attendance which was expected on the occasion, the Council arranged that the meeting should be held at Willis's Rooms, an arrangement which they believe was fully appreciated by the large assembly who attended to hear the President's Inaugural Address. The other Ordinary Meetings have been held at the Royal School of Mines, and have been well attended. The Council believe that the papers read during the past session are not inferior in interest to those that have preceded them. While fully aware of the labour involved in the preparation of some of the papers laid before the Society, the Council hope that there will not be wanting among the Fellows others willing to undertake the task of devoting an equal amount of pains to the preparation of papers no less worthy of the reputation of the Society. It will be observed that in the present report the names of those who took part in each discussion are for the first time set forth.

In their last report the Council stated that a dutiful and loyal address of congratulation to Her Most Gracious Majesty the Queen, on the occasion of the completion of the fiftieth year of her reign, had been presented. The following reply has been received:—

"WHITEHALL,
4th August, 1887.

"Sir,

"I have had the honor to lay before The Queen the loyal and "dutiful Address of the President, Council, and Fellows of the "Royal Statistical Society on the occasion of Her Majesty attaining the Fiftieth Year of Her Reign. And I have to inform you "that Her Majesty was pleased to receive the same very graciously.

"I have the honor to be,
"Sir,
"Your obedient Servant,
(Signed) "HENRY MATTHEWS.

"The Right Honourable
"G. J. Goschen, M.P."

The Council having been moved to pass resolutions showing that public utility would result from a quinquennial census of large towns, and from more complete returns of emigration and immigration, have addressed letters urging these views to the President of the Local Government Board and the President of the Board of Trade respectively.

In continuation of the three parts of the General Index to the Journal already issued, a fourth part for the last fifteen vols. (Vols. 36—50) is being prepared. An appendix to it will be added, giving an alphabetical list of the authors and a classified list of the Papers for the whole fifty volumes. The Council regret that, on the score of expense, they are not able in the present state of the Society's finances to unite these four volumes into one General Index of the Papers read before the Society and an analysis of their contents.

At the Fourth Demographic Congress held in Vienna in September last, it was resolved that the next Congress be held in London in 1891, in conjunction with the Seventh Hygienic Congress, and that the Royal Statistical Society be asked to nominate two gentlemen to represent England on a Permanent Commission for the purpose of making the necessary arrangements. In accordance with the request conveyed through M. Inama-Sternegg, President of the Congress, the Council have nominated—Captain Sir Douglas Galton, K.C.B., D.C.L., LL.D., F.R.S., and Dr. William Ogle, M.A., F.R.C.P., who have both consented to serve on the Commission.

The Meeting of the British Association in 1887, was held at Manchester, where the Society was as usual well represented in Section F (Economic Science and Statistics), and papers were read by the following Fellows of the Society, viz.: Mr. Robert Giffen, LL.D. (President of the Section), Past President of the Royal Statistical Society, Mr. A. E. Bateman, Mr. D. Chadwick, Mr. Hyde Clarke, Sir T. H. Farrer, Bart., Professor W. Fream, Mr. Wynnard Hooper, Mr. G. A. Jamieson, Professor Leone Levi, Professor J. S. Nicholson, M.A., Mr. Thomas Wardle, and Mr. W. Westgarth.

The Society has to lament the deaths of the following members:—

Fellows.

		Date of Election.
d	Joseph Allen	1875
c	Right Hon. A. J. Beresford-Hope, M.P.	1856
	William Henry Bretnall	1886
	David Brown	1885
	E. H. Carter	1877
c	Lionel L. Cohen, M.P.	1877
	Hon. H. F. Cowper	1873
	Madgwick S. Davidson	1885
	George J. Fraser	1883
	Major-General H. Hyde	1879
p (16) *c d*	Professor Leone Levi, LL.D., F.S.A.	1851
d	William Lovely, R.N.	1880
	Sir William McArthur, K.C.M.G.	1873
	Samuel Spalding	1877
	William R. Winch	1872

c Indicates those who on one or more occasions had served on the Council.
d Indicates those who had been Donors to the Library.
p Indicates those who had contributed Papers, with the numbers respectively contributed.

Honorary Fellows.

d	Rev. Cesare Contini (Italy)	1865
d	Professor Fr. Xavier von Neumann-Spallart, D.C.L. (Austria)	1879

The death of Professor Leone Levi occurred on 7th May, and was reported to Council on 10th of the same month, when the following resolutions were passed:—

Resolved:—

(*a.*) "That the Society desires to record its deep regret at the "loss it has sustained by the death of—

PROFESSOR LEONE LEVI, LL.D., F.S.A., &c.,

"who at the time of his decease was a Member of the Council, "and also a Member of the Library Committee, and the Census "1891 Committee, and whose services to the Society have extended "over an uninterrupted period of thirty-seven years.

"Professor Levi was a liberal donor to the library, and has "read sixteen papers to the Society on different subjects. He has "represented the Society as a Delegate at various meetings of the "International Statistical Congress, the British Association, and "the Social Science Association. He also served on several "Committees in former years, and was chosen to be a Vice-President of the Society in 1885."

(*b.*) "That a letter of condolence on the part of the Council "be addressed to Professor Leone Levi's widow."

Mrs. Leone Levi has since presented to the Society a valuable collection of some 500 parliamentary reports, &c., from the library of her late husband.

The following list of Fellows proposed as President, Council, and Officers of the Society for the Session 1888-89 is submitted for the consideration of the meeting:—

d **Indicates those who had been Donors to the Library.**

COUNCIL AND OFFICERS FOR 1888-89.

PRESIDENT.

T. GRAHAM BALFOUR, M.D., F.R.S., F.R.C.P., &c.,

Honorary Physician to Her Majesty The Queen.

COUNCIL.

*Sir G. Baden-Powell, K.C.M.G., M.P.
Arthur H. Bailey, F.I.A.
Alfred Edmund Bateman.
Charles Booth.
Stephen Bourne.
*Edward Hamer Carbutt, M.I.M.E., J.P., &c.
J. Oldfield Chadwick, F.R.G.S.
Major Patrick George Craigie.
Francis Ysidro Edgeworth, M.A.
Thomas Henry Elliott.
Professor H. S. Foxwell, M.A.
Frederick Brooksbank Garnett, C.B.
Rowland Hamilton.
Noel A. Humphreys.
*Frederick Halsey Janson, F.L.S.
J. Stephen Jeans.
Charles Malcolm Kennedy, C.B.
*Sir John B. Lawes, Bart., LL.D., F.R.S., &c.
Robert Lawson, LL.D.
George Blundell Longstaff, M.A., M.B.
John Biddulph Martin, M.A.
Richard Biddulph Martin, M.A.
Francis G. P. Neison, F.I.A.
William Ogle, M.A., M.D., F.R.C.P.
Francis Sharp Powell, M.P.
R. Price-Williams, M.Inst. C.E.
*James Rankin, M.P.
*Ernest George Ravenstein, F.R.G.S.
*The Rt. Hon. The Earl of Rosebery, F.R.S.
Sir Reginald Earle Welby, K.C.B.

Those marked * are new Members of Council.

TREASURER.

Richard Biddulph Martin, M.A.

SECRETARIES.

John Biddulph Martin, M.A. | Alfred Edmund Bateman.
Major P. G. Craigie.

FOREIGN SECRETARY.

John Biddulph Martin, M.A.

The abstract of receipts and payments, and the balance sheet of assets and liabilities on 31st December, 1887, are subjoined, together with the report of the Auditors on the accounts for the year 1887:—

(I.)—ABSTRACT *of* RECEIPTS *and* PAYMENTS *for the* YEAR *ending* 31*st* DECEMBER, 1887.

RECEIPTS.				£	s.	d.
Balance in Bank, 31st December, 1886 ...	£37	15	–			
Balance of Petty Cash.	13	11	3			
" Postage Account	2	5	9			
				53	12	–
Dividends on New 3 per Cent. Stock				72	13	2
Subscriptions received:—						
49 Arrears	£102	18	–			
661 for the year 1887	1,388	2	–			
62 in Advance	130	4	–			
772				1,621	4	–
6 Compositions..........................				126	–	–
Journal Sales				188	–	11
Advertisements in Journal				21	5	3
				2,082	15	4
Cheques that have not been presented, viz.—						
J. Stark, pension......	£10	–	–			
Harrison and Sons ...	104	14	–			
" ...	10	2	6			
				124	16	6
Total...............				£2,207	11	10

PAYMENTS.				£	s.	d.
Rent	£314	16	11			
Less sublet	136	5	–			
				178	11	11
Rates and Taxes				58	9	8
Fire, Lights, and Water				38	1	4
Repairs, Furniture, &c.				43	9	4
Salaries, Wages, and Pension				418	19	2
Journal, Printing	£540	10	9			
" Annual Index	5	5	–			
" Shorthand Reporters	18	18	–			
" Literary Services	43	17	–			
				608	10	9
Ordinary Meeting Expenses				39	8	4
Advertising				54	18	7
Postage and delivery of Journals...				89	17	9
Stationery and Sundry Printing ...				64	9	11
Library				86	14	10
Incidental Expenses				63	19	11
				1,745	11	6
Messrs. Harrison, for Index to Catalogue	£279	13	6			
Messrs. Janson and Co., Charter.........	103	7	6			
Messrs. Waterlow, for Common Seal..	7	1	6			
				390	2	6
				2,135	14	–
Balance per Bank Book..................	£55	13	10			
Balance of Petty Cash	16	4	–			
				71	17	10
Total				£2,207	11	10

(Signed)
"J. O. CHADWICK, F.C.A.,
"H. B. HYDE,
"SAM. DYER NIX, F.C.A.,
Auditors."

"*2nd February*, 1888.

(II.)—BALANCE SHEET *of* ASSETS *and* LIABILITIES, *on* 31*st* DECEMBER, 1887.

LIABILITIES.	£	s.	d.	£	s.	d.
Cheques paid in 1887, but not presented...	—			124	16	6
Harrison and Sons—						
Journal Account	166	2	-			
Miscellaneous Printing Account	17	10	-			
C. and E. Layton, Stationery	23	12	9			
Street Bros., Advertisements	14	10	6			
For Annual Index to Journal	5	5	-			
Messrs. Janson & Co., Legal Expenses ...	52	9	6			
Taxes	36	12	11			
Miscellaneous (as per List)	52	13	-			
				368	15	8
62 Annual Subscriptions received in advance				130	4	-
				623	16	2
Balance in favour of the Society* ..				5,267	19	7
				£5,891	15	9

ASSETS.		£	s.	d.
Cash Balances		71	17	10
2,500*l.* New 3 per Cent. Stock cost		2,371	13	11
Property: (Estimated Value of)—				
Books in Library.........	£1,500			
Journals in Stock	1,000			
Furniture and Fixtures	500			
	—	3,000	-	-
Lease of Premises (cost)	500			
Less amount written off during four years for time expired	140			
	—	360	-	-
Arrears of Subscriptions recoverable (say)		88	4	-
		£5,891	15	9

(Signed) "J. O. CHADWICK, F.C.A.,
"H. B. HYDE,
"SAM. DYER NIX, F.C.A., } *Auditors.*"

"*2nd February*, 1888.

---

* This balance is exclusive of the present value of the absolute Reversionary Interest bequeathed to the Society by the late Dr. Guy.

(III.)—BUILDING FUND (ESTABLISHED 10*th July*, 1873), BALANCE SHEET, *on* 31*st* DECEMBER, 1887.

LIABILITIES.	£	s.	d.
Amount of Fund Invested from last Account	205	14	11
Dividends received during 1887......	6	15	11
	£212	10	10

ASSETS.	Stock.			Cost. £	s.	d.
Invested as per last Account in Metropolitan Consolidated 3½ per Cent. Stock, in the name of the Treasurer, R. B. Martin, Esq.—	£198	10	8	205	14	11
Purchased during the year............	6	-	5	6	15	11
	£204	11	1	£212	10	10

(Signed) "J. O. CHADWICK, F.C.A.,
"H. B. HYDE,
"SAM. DYER NIX, F.C.A., } *Auditors.*"

"*2nd February*, 1888.

"ROYAL STATISTICAL SOCIETY.

"REPORT OF THE AUDITORS FOR 1887.

"*The Auditors appointed to examine the Treasurer's Accounts of the Society for the Year* 1887,

"REPORT:—

"*That they have compared the Entries in the Books with the several Vouchers for the same, from the* 1st *January to the* 31st *December*, 1887, *and find them correct, showing the Receipts (including a Balance of* 53*l.* 12*s.* –*d. from* 1886) *to have been* 2,082*l.* 15*s.* 4*d.*, *and the Payments* 2,135*l.* 14*s.* –*d.*

"*The Balance at Bankers and in hand amounted to* 71*l.* 17*s.* 10*d.*, *subject to the payment of cheques at* 31*st December*, 1887.

"*They have also had laid before them an Estimate of the Assets and Liabilities of the Society at the same date, the former amounting to* 5,891*l.* 15*s.* 9*d.*, *and the latter to* 623*l.* 16*s.* 2*d.*, *leaving a Balance in favour of the Society of* 5,267*l.* 19*s.* 7*d.*, *exclusive of the present value of the absolute Reversionary Interest bequeathed to the Society by the late Dr. Guy.*

"*The amount standing to the credit of the Building Fund at the end of the year* 1887, *was* 212*l.* 10*s.* 10*d.*, *invested in Metropolitan Three and a Half per Cent. Stock, in the name of the Treasurer, R. B. Martin, Esq.*

"*They have verified the Investments of the Society's General Funds and Building Fund, and also the Banker's Balance, all which were found correct.*

"*They further find that at the end of the year* 1886 *the number of Fellows on the list was* 943, *which number was diminished in the course of the year to the extent of* 59, *by Deaths, Resignations, and Defaulters, and that* 92 *new Fellows were elected, and the Resignation of one Fellow was cancelled, leaving on the list on the* 31st *December*, 1887, *nine hundred and seventy-seven* (977) *Fellows of the Society.*

(Signed) "J. O. CHADWICK, F.C.A.,
"H. B. HYDE,
"SAM. DYER NIX, F.C.A.,
} *Auditors.*

"*2nd February*, 1888."

ROYAL STATISTICAL SOCIETY,

(9, ADELPHI TERRACE, STRAND, W.C., LONDON).

THOSE persons who are inclined to benefit the Society by legacies are recommended to adopt the following

FORM OF BEQUEST.

I give and bequeath unto the "Royal Statistical Society," the sum of £   , such legacy to be paid out of such part of my personal estate, not specifically bequeathed, as the law permits to be appropriated by will to such a purpose.

NOTE A.—All gifts by will to the Society of land, or of money secured on, or directed to be secured on, or to arise from the sale of, or directed to be laid out in the purchase of, land, will be void. Gifts may be made by will of stock in the public funds, shares or debentures of railway or other joint-stock companies, or money to be paid out of the testator's pure personal estate, or of personal chattels.

NOTE B.—Bequests may be made either for the general purposes of the Society, or to the Society's "Building Fund," which has been recently established.

Vol. LI.] [Part I.

JOURNAL

OF THE ROYAL STATISTICAL SOCIETY,

MARCH, 1888.

DEFECTS *of* ENGLISH RAILWAY STATISTICS.

By SIR JULAND DANVERS, K.C.S.I., *the Public Works Secretary at the India Office, and Government Director of the Indian Railway Companies.*

[**Read before the Royal Statistical Society, 20th December, 1887.**
Dr. T. GRAHAM BALFOUR, F.R.S., a Vice-President, in the Chair.]

IT is, I presume, one of the functions of this Society not only to receive, collect, and disseminate information of a statistical character which is of public utility, but also to endeavour to obtain, whether from the departments of the State or from bodies intrusted with interests of a national character, returns which convey as complete and accurate an account as possible of the matters to which they relate.

My object in bringing this subject forward is to endeavour, through the medium and the influence of the Statistical Society, to induce the railway companies of this country, who are certainly intrusted with interests which affect alike the capitalist, the merchant, the agriculturist, and the general community, to supply a defect in their statistical returns of railway working in order that a more safe and reliable guide for purposes of efficient and economical management than is now given may be provided. The present returns defeat one of the objects of statistics, which is to draw comparisons between facts derived from similar sources and systems, and to establish sound principles of administration.

I may say at once that great credit must be given to the directors and managers for the high condition to which they have brought the railway service in this country. It is wonderful to think what private enterprise has done! Without State aid, and in spite of opposing forces of various kinds, a network of railways has been spread over the country at an enormous expense; and in working them speed, safety, comfort, and convenience have been secured to a degree which has not been reached in any other country. This state of things has no doubt been arrived at by slow degrees, and competition, or the fear of competition, has aided it. Development has by no means been systematic. Progress has been fitful and spasmodic, according to local requirements and the amount of money available for investment. Most of our early arrangements connected with the regulation, the dimensions, and equipment of railways were governed in a great measure by accidental circumstances. We adopted the 4 feet 8½ inch gauge because it happened to have been applied to road vehicles and to tramways. We adapted the style and character of the old stage coach to the first class passenger vehicles. For some time the third class remained without covering. And yet through the genius of our engineers and the organizing powers of our business men, we have done great things, and we have now arrived at a high pitch of efficiency. But the account of how the railways are worked is imperfect, and the advantage to be derived from a public knowledge of it is wanting. There are certainly indications that of late years economy has been more closely studied than formerly. During the depression of trade which prevailed between 1876 and 1879, railway management received more attention than had probably ever been paid to it before. Just as when the coal famine in 1873 forced consumers to think how they could economise fuel, so when railway dividends were threatened, railway expenditure attracted notice. The results were, reduced working expenses and a check on the diminution of dividends. One form which economy took was, as Sir Bernhard Samuelson describes it, "a more intimate fusion of "the interests of the various railways, either by amalgamation or "by consolidation of their interests;" but, so far as one can judge, no attempt was made to investigate the real sources of waste and expenditure. One of the most interesting problems of the present day is how a railway can be most economically and efficiently worked, and what furnishes the best basis for charges to the public. For its solution the cost of service is an essential factor. Now this factor cannot be ascertained without carefully recorded statistics, showing not merely how many passengers are booked and how many tons of goods are lifted—facts which are available on all railways—but the distances they are transported. In other words, we ought to have the total unit mileages under both coaching and merchandise—the two heads to one or other of which all service must be referred—1 passenger carried 1 mile being the passenger unit, and 1 ton carried 1 mile being the unit of other coaching and of goods traffic. With these data, and with proper rules for the classification of expenses, and for the division between coaching and merchandise of such of those expenses as are common to both, we should be in a position to arrive at the average cost of carrying a passenger and a ton of goods 1 mile, respectively. Such data are not available for any railway in the United Kingdom. The train mile is not an appropriate unit, for though it may be reduced to an average under both coaching and merchandise for every separate railway, there can be no comparison of working on such a basis, as the constitution of the trains may vary with the circumstances of each line, as well with the skill with which each line is worked. Moreover, as the passenger and the ton are the units of charge to the public, we ought to have the cost of performing the service on like units.

It was my duty for many years to prepare an annual report on Indian railways, showing their progress and the results of working. For some time I was obliged to be content with the usual returns of gross receipts and expenses, the number of train miles run, the number of passengers booked, the number of tons lifted, and the receipts and expenses per train mile. But the results attainable from these data were obviously unsatisfactory. In 1870 Mr., now Sir Alexander Rendel, with whom I had been in constant communication on the subject, brought me the result of discussions which he had with General Richard Strachey in India, in the shape of a statement showing that he had worked out the average receipts and expenses per passenger, and per ton of goods, per mile. An examination of the process of arriving at the figures showed that, although it might be open to criticism, it would serve most useful, economic, and administrative purposes. Averages are of course liable to be inexact, but the question for solution is not one calling for absolute precision. It is more one of approximating sufficiently near for all practical objects to a result in connection with an unexceptionable unit. Ever since that time this information has appeared in the statistical returns of all Indian railways; and I have no hesitation in saying that it furnishes the only sound basis on which economical management can be tested, and that it has been most usefully applied in a great number of cases. The same information is included in colonial and continental railway returns, and is given in a most complete form in American railway statistics; but it is studiously excluded from the accounts of English railways. The attempt to draw comparisons between the working of English and other lines is thus baffled, and the means of obtaining reliable results are withheld.

Some people have been profane enough to indulge in the remark that there is nothing so deceptive as facts and figures. This is certainly true of facts which are not truths, and of figures which profess to give what they do not accomplish. The English railway returns do not, as I have said, go beyond giving the receipts and expenses per train mile; and these afford no real criterion of good or bad working arrangements. Economical management consists in keeping down the train mileage and keeping up the train loads. The proportion of train miles run to the length of a line is no test of the work done. The train mileage may show a low figure of cost, but if more trains are run than are necessary, the resulting low rate per train mile conveys an altogether erroneous idea of the economy with which the traffic is conducted. Again, a train mile is variable in its meaning: whereas what is required to be of value is a constant unit with a defined meaning. The limited information given by the English companies is thus calculated to mislead.

There is scarcely a single person who has undertaken to investigate the working of railways in various countries, who has not expressed regret that the British returns do not express the work performed in terms of the number of passengers and tons of goods carried one mile. In every annual report issued by the Board of Trade the absence of this information is lamented. "Unfortunately "it is impossible," say Mr. Calcraft and Mr. Giffen in 1884, "to "show what is the receipt per ton per mile, which would indicate "decisively whether more business is being done at a cheaper "rate." In previous and subsequent reports the same desideratum is alluded to. The department of the State which is charged with the preparation and publication of statistical facts relating to the various industries of the country, thus acknowledges its inability to perform its duty in regard to one of the most important national institutions, because essential information for the purpose is withheld by those who could supply it. This has given rise to the suspicion that the railway companies are interested in keeping it back, whereas its production would serve their best interests.

In December last year Mr. Jeans read a valuable paper to this Society "On the Cost and the Conditions of Working Railway "Traffic in Different Countries." It contained many interesting and carefully prepared calculations and statements, but he could not arrive at any satisfactory conclusions in regard to the working of lines in this country. In one place he is "confounded by the "extent of the variations that occur on various lines." In another he observes, "these differences are not explained by the not "unnatural variations in the character of the traffic." "The "information given is not such as will enable an inquirer to detect "where the management is defective. The train mileage returns "will not do so, the ton miles would." "In Great Britain," he adds, "the railways, whether by accident or by design, have "hitherto contrived to make it impossible for the public to discover "the average charges for the transport of either the one or the "other for any one railway, or for the country as a whole. The "missing link in the chain of evidence—a link which is not "withheld in any leading country except our own—is the number "of passengers and the number of tons of goods and mineral "traffic transported one mile."

Mr. Jeans's paper was followed by the publication of his excellent work entitled "Railway Problems," every chapter of which points to the need of the adoption of these units. And so say all other railway economists who have examined the subject. Mr. Price Williams and Mr. Conder, both eminent railway statists, in this country; Mr. F. Haggard, who has written much on railway working, and the American statisticians, Dorsey and Poor especially, join the chorus of complaint. Why then is the information not given? Why are figures only furnished which afford no safe guide of economic working? The proportion of working expenses to receipts is of no use for the purpose. The cost of working per mile of railway affords no criterion. The cost per train mile does not, for the lower that cost, the greater may be the extravagance. The cost per vehicle cannot.

So far as I can ascertain them, the chief objections on the part of English railway managers are: (1) that it is difficult, if not impossible, to obtain the information with sufficient accuracy, and (2) that if obtained it would be of no practical use.

In answer to both these objections I would refer to those countries, especially America and India, where the information is without much difficulty supplied, and where it is found to be of the greatest service in ascertaining where economy and good management is needed, and in determining rates and fares which shall be alike profitable to the railways and advantageous to the customer.

I admit that in this country the labour and trouble in giving the passenger and ton miles would be greater than in India; but the machinery for preparing statistics is so perfect, that this difficulty should be easily overcome, and the result would fully compensate for any extra expense.

In America the difficulty is as great as here, and yet the figures are not only given for each line as a whole, but for each of its parts. The late lamented Mr. Grierson, in his able treatise on railway administration, entitled "Railway Rates, English and Foreign," objected to any attempt being made to show the cost of carrying a passenger or a ton 1 mile, because it could not be obtained with sufficient accuracy to justify its application in determining rates. One of his arguments was that the cost of conveyance bears no relation to the value of goods. This may be so, but it does not interfere with my point, viz., that the knowledge of the *average* cost of carrying a passenger, and a ton of goods 1 mile, must be of the greatest use in determining the rates to be charged for such units.

It is recognised as a rule of management that goods of a valuable description may properly be charged higher rates than goods of an inferior value. The actual cost of conveyance may or may not be more, but risks are incurred, and extra care is bestowed upon them which justify the higher rate; on the other hand, charges for staple commodities may be lower than the average cost of transport and yet be remunerative. It is contended that the aim of railway companies should be to charge what the traffic will bear; and this was explained by Mr. Grierson as "only another way of saying "that rates should be so fixed as to enable a manufacturer or a "trader and the railway company to obtain a reasonable profit, "and that rates should ultimately be determined by the law of "supply and demand."

What does this mean? Can a rate which shall give a reasonable profit to trader and railway company be ascertained by the law of supply and demand? I do not think it would be found practicable. If the supply be more than the demand is the charge to be increased, and if less is it to be reduced? A railway charge may to a certain extent be likened to a tax: it must be paid whether convenient or not. We see the effect of a tax upon an article of general consumption. The tax is high: the supply of the article remains the same, but the demand is diminished in consequence of the tax. Lower the tax, the price is less. The consumer immediately takes advantage of the reduced price; and demand and supply increase simultaneously. So it is with railway charges: rates and fares are reduced, and the number of passengers and the quantity of goods increase at once. But both had to bear the higher rates which existed before, and the customer and the railway suffered accordingly.

If it had not been for competition in this country, and for the interference of Parliament in fixing maximum rates, it is impossible to say what the charges would have been. Even now, being determined not with reference to the cost of transport, but according to what the traffic will bear, an undue charge is in the absence of competition often persisted in, and both railway and customer suffer, the one by a restricted traffic and less profits, the other by raising the price of his goods in the market. But if in most cases competition is the governing factor in the matter, it is important, if not necessary, to know what the cost of service is, or as it may be termed the cost of production. Otherwise a ruinous competition may be carried on, and goods may be carried at a loss. The transport of goods, and the conveyance of passengers from one place to another, may be regarded in the light of a purchasable commodity. The price of the service rendered is expressed by the charge; and whether the vehicle be a wagon drawn by horses on the high road, a ship on the ocean, a ferry across a river, or a carriage on a first class railway, the exchange value, *i.e.*, the money given for the work done, must in a great measure depend upon the cost of production. Sir Rowland Hill, when once describing his reflections on the question of reforming Post Office charges, said, "Before making up my mind as to what " simplification of arrangement and reduction of charge were " practicable, I set myself to analyse carefully each item of cost in " the service performed by the Post Office as regarded letters " committed to its charge. In the course of the investigation I " found that the chief items of cost were what I might call the " terminal services, *i.e.*, those of collection and delivery;" and he came to the conclusion that many more letters could be conveyed at the same cost as was then incurred, and that if only numbers were sufficiently increased, a lower rate of postage would cover expenses and produce a profit. The principle is the same in respect to railway traffic. By ascertaining the unit cost as near as practicable, means are provided for quoting a rate with some pretension to knowledge as to what margin is left for profit.

The following tables show the cost of carrying a ton and a passenger 1 mile, and the receipts from each, on several Indian railways; and illustrate clearly that low rates are not incompatible with high profits. Shareholders, on whose account high rates are so often excused and advocated, would suffer if the rates which produce the results here given were raised. It will also be seen how deceptive the train mileage returns may be. Taking the goods traffic, the railway for instance (the Rajputana-Malwa) which appears to work at the lowest rate according to the expenditure per train mile, is the fourth on the list when the expenses are analysed by the ton mile expenditure; and the East Indian Railway, which conveys 1 ton per mile at the lowest cost, is third according to the train mileage return.

First Half of 1886.

Railways.	GOODS TRAFFIC.									
	Number of Train-Miles.	Average Number of Tons in a Train.	Per *Train*-Mile.				Number of Ton-Miles.	Per *Ton*-Mile.			
			Total Earnings.	Working Expenses	Comparison of Expenses on the Different Railways (the lowest taken as 100).	Net Earnings.		Total Earnings.	Working Expenses	Comparison of Expenses on the Different Railways (the lowest taken as 100).	Net Earnings.
BROAD GAUGE.			Rs.	Rs.		Rs.		Pies.	Pies.		Pies.
East Indian	3,111,280	186·01	5·72	2·09	131	3·63	578,714,181	5·90	2·16	100	3·74
North-Western	2,059,237	120·50	4·41	2·26	141	2·15	248,221,001	7·03	3·61	167	3·42
Eastern Bengal	233,188	118·50	4·71	3·86	241	0·85	27,514,166	7·63	6·26	290	1·37
Madras	614,754	85·30	3·45	2·22	139	1·23	54,997,385	7·76	5·00	231	2·76
Great Indian Peninsula	3,393,926	120·28	5·48	2·22	139	3·26	408,211,624	8·75	3·55	164	5·20
Bombay and Baroda	768,285	178·87	7·50	2·84	178	4·66	137,422,362	8·05	3·05	141	5·00
Oude and Rohilkund	543,478	156·51	3·86	2·14	134	1·72	85,060,695	4·73	2·62	121	2·11
METRE GAUGE.											
Rajputana-Malwa	2,048,590	77·70	3·29	1·60	100	1·69	182,981,197	7·07	3·43	159	3·64
Burma	210,051	84·41	3·97	2·41	251	1·56	17,730,382	9·04	5·48	254	3·56
South Indian	524,448	54·20	2·14	1·69	106	0·45	28,426,955	7·59	5·98	277	1·61

TABLE B.

	BROAD GAUGE.			
	East Indian.			Great
	1877.	1882.	1886.	1877.
Mean mileage worked (miles)	1,503	1,506½	1,712·67	1,268½
Average number of passengers in a train	237	259·35	247·50	222
„ tons of goods in a train (tons)	135·5	165·91	188·87	85
Average number of passengers per vehicle	14	15·36	15·58	15
„ tons of goods per wagon (tons)	4·52	5·65	5·66	3·51
Number of passengers carried 1 mile	627,117,403	778,988,659	914,214,793	344,400,000
„ tons of goods carried 1 mile	841,308,637	1,003,429,077	1,061,229,793	562,158,600
Average sum received for carrying a passenger one mile	Pies 3·29	Pies 2·88	Pies 2·71	Pies 3·26
Average cost of carrying a passenger 1 mile	„ 1·09	„ 0·83	„ 0·82	„ 1·66
„ profit on carrying a passenger 1 mile	„ 2·20	„ 2·05	„ 1·89	„ 1·60
Average sum received for carrying 1 ton of goods 1 mile	„ 7·13	„ 6·26	„ 5·85	„ 8·75
Average cost of carrying 1 ton of goods 1 mile	„ 1·90	„ 2·42	„ 2·15	„ 4·32
Average profit on carrying 1 ton of goods 1 mile	„ 5·23	„ 3·84	„ 3·70	„ 4·43

Note—It should be explained that the figures given for the year 1877 were arrived at by
and that the statements for the other years are made under the new formula explained in

First Half of 1886.

COACHING TRAFFIC.											
Number of Train-Miles.	Average Number of Passengers in a Train.	Per *Train*-Mile.				Number of Passenger-Miles.	Per *Passenger*-Mile.				Railways.
		Total Earnings.	Working Expenses	Comparison of Expenses on the Different Railways (the lowest taken as 100).	Net Earnings.		Total Earnings.	Working Expenses	Comparison of Expenses on the Different Railways (the lowest taken as 100).	Net Earnings	
		Rs.	Rs.		Rs.		Pies.	Pies.		Pies.	BROAD GAUGE.
1,823,161	256·59	4·13	1·19	127	2·94	467,824,984	2·70	0·80	101	1·90	East Indian
1,098,089	259·09	3·86	1·54	164	2·32	284,499,678	2·50	1·00	127	1·50	North-Western
287,735	226·83	3·56	2·08	221	1·48	65,266,175	2·68	1·43	181	1·25	Eastern Bengal
457,601	279·75	3·50	1·62	172.	1·88	128,012,715	2·06	0·96	122	1·10	Madras
1,382,685	168·21	2·87	1·31	139	1·56	232,583,281	2·71	1·11	141	1·60	Great Indian Peninsula
481,168	273·02	4·17	1·28	136	2·89	131,369,300	2·63	0·81	103	1·82	Bombay and Baroda
569,514	166·66	2·43	1·06	113	1·37	94,924,870	2·61	1·09	138	1·52	Oude and Rohilkund
											METRE GAUGE.
985,349	208·75	2·64	0·94	100	1·70	205,690,541	2·15	0·79	100	1·36	Rajputana-Malwa
258,046	152·38	2·63	1·50	160	1·13	39,320,272	3·10	1·75	222	1·35	Burma
425,616	265·35	3·00	1·65	175	1·35	112,937,234	2·07	1·03	130	1·04	South Indian

TABLE B.

BROAD GAUGE.					METRE GAUGE.		
Indian Peninsula.		Bombay and Baroda.			Rajputana-Malwa.		
1882.	1886.	1877.	1882.	1886.	1877.	1882.	1886.
1,446¾	1,501¼	443½	458½	461	396	1,115½	1475
145·54	163·40	279	249·59	258·47	202	188·95	208·16
97·96	118·62	123·5	147·48	177·24	62	60·93	87·07
12·13	12·57	30	16·39	19·72	12·32	13·99	16·56
4·08	4·57	2·91	4·14	4·21	2·59	2·86	3·45
370,659,387	459,383,213	143,251,300	209,686,200	252,680,806	82,772,400	301,826,920	415,455,232
545,028,710	687,763,372	85,760,420	135,414,841	231,253,939	26,922,142	130,807,716	332,726,651
Pies 3·07	Pies 2·72	Pies 3·21	Pies 2·72	Pies 2·64	Pies 2·08	Pies 2·16	Pies 2·15
„ 1·41	„ 1·39	„ 1·53	„ 1·41	„ 0·95	„ 1·98	„ 1·19	„ 0·88
„ 1·66	„ 1·33	„ 1·68	„ 1·31	„ 1·69	„ 0·10	„ 0·97	„ 1·27
„ 9·70	„ 8·65	„ 10.73	„ 9·43	„ 7·79	„ 12·22	„ 10·29	„ 6·94
„ 4·64	„ 3·86	„ 3·45	„ 4·73	„ 3·27	„ 6·46	„ 5·32	„ 3·77
„ 5·06	„ 4·79	„ 7·28	„ 4·70	„ 4·52	„ 5·76	„ 4·97	„ 3·17

Sir A. M. Rendel according to an equal division of expenses between goods and passengers, the paper.

If more economy is now exercised on Indian railways, it is in a great measure due to the returns of traffic, together with an analysis rendered week by week and half-year by half-year by every railway administration in that country. Economical results may, I admit, be also partially accounted for by the increase of traffic, by competition, and by a suitable division of railway systems, but it is chiefly due to an increase of the train loads, and a proportionate reduction in the train mileage; in other words, to a better management of the traffic. The returns just referred to revealed a waste of power and of vehicle space which was not before realised. The forms of these statements are appended. In this country the high authority (Mr. Grierson) I have already referred to acknowledges that "wagons containing "only a small quantity of goods are often sent long distances "at little profit if not at a loss. Goods trains are run at an "excessive speed, and therefore do not and cannot carry such "remunerative loads as in other countries, notwithstanding some "of the undoubtedly low rates charged there. So-called concessions not really essential are made to trading and other interests, "when it would be better that the companies should earn on the "traffic a reasonable income to go into the pockets of the shareholders, or be expended as suggested by Sir Bernhard Samuelson, "in improved accommodation." All this is attributed to undue competition; but, whatever the cause, stronger testimony could scarcely be borne to the present unscientific plan of working pursued in this country: a system which necessarily entails severe loss upon the shareholder, and adds to the charge upon the customer.

I may be told that the proposal to obtain the cost of service, and to make it the basis of measures of economy and of charges, has been already considered and discarded, and that a committee of the House of Commons in 1872 pronounced it to be impracticable; I am not, I think, wanting in respect to a committee of the House of Commons if I question its infallibility. Committees have frequently changed their opinion on railway administration, and the legislature itself has from time to time altered its decisions. Besides, within the last fifteen years much has been done in improving railway statistics; and it is not likely, with the actual proof before them of the information being now obtained and published in other countries, that a committee of the House of Commons would declare it to be impracticable. Difficulties have been made by the excessive zeal of those objectors who to cast ridicule on the movement endeavour to point out the inutility of attempting to obtain perfect accuracy. "Will those," we are asked, "who talk about cost of service, reveal the formula by "which they can accurately calculate the cost of carriage of a "particular article carried in the same truck with a dozen others, "all coming from different places and destined for different "stations over three or four different lines, the cost of no "two of which has been the same, and the working expenses of "which are totally dissimilar?" Such refinement of investigation even if possible would be very troublesome, and is unnecessary for practical purposes. We go further, and admit that approximation only is possible. But we contend that the approximation capable of being arrived at is invaluable. The formula that has for some years been in use for Indian railways was not adopted without much consideration and discussion, and the method has been varied as experience was gained. A chief difficulty in a satisfactory analysis is the apportionment of the expenses between the goods and passenger services; but the difficulty is common to any system which seeks to discriminate between the two, and no system is worth attention that does not. It was originally assumed by Sir A. Rendel for his calculations that a passenger and goods train cost the same per train mile run. In working the system out in India, however, the expenses of the different departments, maintenance, locomotive, &c., were apportioned on different bases considered more correct, and the detailed analyses were for many years prepared accordingly. In the year 1880 a committee of experts was appointed in India to consider the matter, and the conclusion they came to was that division should be made in the ratio of the gross[1] ton miles for coaching and goods respectively, the expenses of maintenance, of the locomotive department, of carriages and wagons, of traffic, of general superintendence and miscellaneous charges being treated alike. By dividing the whole working expenses between the different descriptions of traffic in proportion to the gross ton mileage performed for each, an approximately correct statement of the cost of working each description of traffic is arrived at. It is then a simple matter to calculate the unit cost.

It will probably be said that these various modes of attempting to attain the nearest approximation to absolute correctness prove the difficulty of obtaining the desired unit cost in this country. But surely it will not be contended that they are difficulties which cannot be overcome, and which it is worth some trouble to overcome. In Sir Bernhard Samuelson's valuable report to the President of the Association of the Chambers of Commerce of the United Kingdom, on the railway goods tariffs of Germany, Belgium, and Holland, compared with those of this country, he pronounces this opinion, after a most careful investigation of the systems pursued in those countries: "The traffic in commodities in the "countries of the north of Europe, which compete with us for the "trade of the world, is carried on under rates founded on intel-"ligible principles, and not, as is frequently the case in this "country, on the hap-hazard estimate by traffic managers of what "the traffic will bear." This points to a question of vital interest to this country, and in these days of intense and universal competition between the different countries of the world and our own, should not be neglected by our railway administrators. I do not contend that rates should be based *only* on the cost of service, but that cost of service, whether ascertained or not, must be one of the most important elements in the charge which may properly be made, and therefore that it is important to ascertain what it is, and then to use it as a guide, just as I have before observed the cost of production must influence prices in every transaction of commerce. The knowledge of what the cost is should, as regards railways, prevent undue competition, should assist in the judicious application of rates to different classes of goods and passengers, and enable useful comparisons to be made between different railways for the mutual benefit of each.

---

[1] That is the freight and the dead weight, including engines, tenders, and brake vans.

It may now be useful to compare, by way of illustration, the working results of different lines. While doing so I am not unmindful of the fact that conditions of traffic and of working vary considerably in different countries, and on different railways; that, for example, the leads in some are much longer than in others; that the price of labour, of fuel, and of materials is greater in some than in others; that the alignment is more or less favourable, that the articles conveyed also are different, some requiring more care and involving more risk than others; but in the main, comparisons of average working may be justly made on the passenger and ton mile basis, and an opinion may be fairly formed of the economy of working and success of management by means of this information.

The railways to which the tables appended relate, are characteristic examples of fully developed systems in India on the 5 feet 6 inches, and the metre, gauges.

Taking the most important of these lines, viz., the East Indian, it will be found on examination that last year 914,214,793 passengers of all classes were carried 1 mile at a cost of 292,834*l.*; that 1,061,229,793 tons of goods and minerals were carried 1 mile at a cost of 891,267*l.*; and that this traffic was conveyed in 56,013 passenger trains, running 3,693,753 miles, and in 27,141 goods trains, running 5,618,799 miles. Thus each passenger was conveyed at the cost of about 0·82 pie, or, at the present rate of exchange of 1*s.* 6*d.* the rupee, a little more than three-tenths of a farthing per mile, at a profit of about seven-tenths of a farthing, being 230 per cent. on the cost; and each ton was carried at the cost of 2·15 pies or about eight-tenths of a farthing, at a profit of one and four-tenths of a farthing, being 175 per cent. on the cost.[2]

When, by means of these returns, it was found that there was waste in the train miles run and in the train loads, measures were taken to prevent the extravagance. The number of wagons in a train was increased, and the load in each wagon was made greater. The consequence has been that the average loads by train and by vehicle have been larger. Economy has been secured, and the public have benefited: for the railway authorities found that it was expedient and desirable to reduce rates. This has provoked more traffic, and brought larger profits. The usual rate for a third class passenger is now 2 pies, or about three-quarters of a farthing per mile, and it appears by the last report that reductions to 1¾ pies, and 1½ pies on some lines, has resulted in a considerable increase in the number of passengers, with a satisfactory improvement in receipts. The first and second classes scarcely yield a profit: so that the average cost arrived at is higher than that at which the bulk of the passenger traffic is worked, the proportion of the lowest class carried being about 97 per cent. of the whole. The same remark applies equally to goods. The lowest rates for staples such as grain, seeds, and salt, are from ⅛*d.* to ⅓*d.*, per ton per mile. I believe that for economy of working and for lowness of charges the Indian railways will compare favourably with railways in any other part of the world.

I would now only remark in conclusion that the problems involved in railway management are not only very interesting, but are intimately connected with the welfare and prosperity of a country. Economy is of the first importance both for the shareholders and the public; extravagant management and high rates go together, and both are opposed to the interests of all concerned. Any one item of information that leads to a clear issue is valuable, and should be welcomed. It may seem a small matter, and some may think that its importance has been exaggerated; but if it could be the means of reducing expenditure and of placing rates and fares upon a better footing, the benefit would soon be felt, and the legitimate claims of the public would be met. The question is apart from that of equal mileage rates or differential rates. These are matters of principle in connection with management, and the knowledge of the cost of service would no doubt assist in facilitating such arrangements. Nor would it interfere with that

---

[2] These calculations have been made at the exchange of 1*s.* 6*d.* the rupee.

1886.

Progressive Number.	Headings.	Broad Gauge.			
		East Indian.[b]	North-Western.[c]	Eastern Bengal.	Madras.
1	Miles open on 31st Dec., 1886 Miles	1,723·17	1,850·78	233·69	860·38
1A	Mean mileage worked during the year „	1,712·67	1,863·78	233·69	860·38
2	Total capital outlay Rs.	37,08,95,711	29,40,97,667	5,02,19,726	11,59,31,134
3	„ per mile open[a] „	2,10,903	1,58,280	2,04,971	1,31,086
4	Coaching receipts „	1,47,40,607	83,40,511	19,34,753	33,27,011
5	Goods receipts „	3,23,39,405	1,62,80,663	28,78,183	44,57,841
6	Gross earnings „	4,79,87,847	2,53,04,949	52,03,359	79,66,098
7	Working expenses „	1,66,55,524	[d]1,33,39,242	32,24,406	47,36,854
8	Ditto per cent. of gross receipts	34·71	52·71	61·97	59·46
9	Net earnings Rs.	3,13,32,323	1,19,65,607	19,78,953	32,29,244
10	Ditto per cent. on capital outlay	8·45	4·7	3·94	2·79
11	Ditto ditto on paid-up capital	—	—	—	2·78
12	Passenger train-miles No.	3,693,753	2,242,185	594,270	973,753
13	Goods train-miles „	5,618,799	3,807,938	528,803	1,299,320
14	Total „ „	9,312,552	6,050,123	1,123,073	2,273,073
15	Coaching receipts per passenger train-mile Rs.	3·99	3·72	3·26	3·42
16	Goods receipts per goods train-mile „	5·76	4·28	5·44	3·43
17	Gross earnings per train-mile „	5·15	4·18	4·63	3·50
18	Working expenses per train-mile „	1·79	2·21	2·87	2·08
19	Net earnings per train-mile „	3·36	1·97	1·76	1·42
20	Average number of passengers in a passenger train	247·50	248·26	204·60	285·39
21	Average number of tons in a goods train	188·87	127·19	116·65	85·84
	Average number of vehicles (excluding brake-vans)—				
22	In each passenger train	15·88	15·30	14·53	15·08
23	„ goods train	33·34	27·01	32·66	20·47
24	In each mixed mile { Passenger carriages	15·79	10·75	9·97	7·17
	{ Goods vehicles	3·62	7·58	5·32	12·35
25	Number of passengers carried 1 mile	914,214,793	556,646,049	121,585,796	277,898,184
26	„ tons of goods carried 1 mile	1,061,229,793	484,332,584	61,689,166	111,589,083
	Average cost of hauling for 1 mile—				
27	One passenger unit Pies.	0·82	1·18	1·42	0·97
28	„ ton of goods „	2·15	3·57	5·94	5·13
	Average sum received for carrying for 1 mile—				
29	One passenger unit Pies.	2·71	2·53	2·71	1·96
30	„ ton of goods „	5·85	6·45	8·96	7·67

---

[a] Excluding steamer service and suspense accounts.

[b] Includes the branch lines worked by the East Indian Railway Company.

[c] Includes the Amritzar-Pathankot Railway, except in items 2, 3, 9, and 10.

[d] Includes rent of leased line (Rs. 56,052).

[e] Includes the Bhopal-Itarsi, Dhond-Manmád and Berar State Railways, except in items 2, 3, 9. 10, and 11.

1886.

Broad Gauge.			Metre Gauge.			
Great Indian Peninsula.[e]	Bombay, Baroda, and Central India.[g]	Oudh and Rohilkhand.	Rajputana-Malwa.[i]	Southern Mahratta.	Burma.	South Indian.[j]
1,504·75	461·00	686·54	1,664·42	476·50	327·00	662·00
1,501·23	461·00	681·48	1,475,01	341·37	327·00	662 00
26,94,17,522	9,35,35,807	8,27,96,821	12,80,59,507	3,66,01,346	2,85,59.214	4,67,57,701
2,02,995	1,97,147	1,16,367	74,342	71,729	85,310	67,945
78,85,564	38,86,050	26,85,513	52,44,152	5,39,366	13,93,744	25,64,140
3,09,98,367	93,81,161	34,09,992	1,20,33.740	10,66,965	12,10,786	23,35,149
3,92,57,906	1,35,05,635	65,05,408	1,74,57,146	16,34,918	26,57.955	49,35,618
1,82,50,182[f]	55,52,879	36,44,653	87,76,027	11,41,593	17,14,684	34.44,262
46·49	41·12	56·02	50·27	69·83	64·51	69·78
2,10,07,724	79,52,756	28,60,755	86,81,119	4,93,325	8,43,271	14.91,356
7·80	8·58	3·46	6·80	1·35	3·30	3·16
7·90	8·64[h]	3·25	—	0·91	—	3·14
2,811,418	977,611	1,007,622	1,995,864	204,542	516,579	850,364
5,799,745	1,304,715	1,058,870	3,821,213	495,091	316,335	1,088,873
8,611,163	2,282,326	2,066,492	5,817,077	699,633	832,914	1,939,237
2·80	3·98	2·66	2·63	2·64	2·70	3·02
5·34	7·19	3·22	3·15	2·16	3·83	2·14
4·56	5·92	3·14	3·00	2·3	3·19	2·55
2·21	2·43	1·76	1·51	1·6	2·06	1·78
2·44	8·49	1·38	1·49	0·71	1·13	0·77
163·40	258·47	182·63	208·16	176·82	152·53	266·85
118·62	177·24	133·18	87·07	49·19	84·62	54·69
13·00	13·10	14·53	12·57	14·91	17·69	13·23
26·00	42·09	25·26	25·27	21·62	29·12	12·51
7·00	8·00	17·33	12·24	7·69	12·20	11·71
8·00	16·98		8·38	7·43	21·33	12·42
459,383,213	252,680,806	184,024,196	415,455,232	36,167,416	78,795,506	226,919,207
687,963,372	231,253,939	141,019,833	332,726,651	24,355,434	26,766,716	59,552,470
1·39	0·95	1·13	0·88	1·73	1·87	1·06
3·86	3·27	2·99	3·77	6·21	5·83	6·16
2·72	2·64	2·62	2·15	2·63	3·11	2·07
8·65	7·79	4·64	6·94	8·41	8·69	5·53

---

[f] Includes rent of leased lines (Rs. 3,54,907), but excludes Rs. 12,415, being charges incurred direct by the State on the Dhond-Manmád Railway.

[g] Includes the Pátri branch, except in items 10 and 11.

[h] Deducting Rs. 39,765 for interest on overdrawn capital from the net earnings, the percentage on the paid-up capital will be 8·60 per cent.

[i] Includes the figures of the Cawnpore-Achnera for the last three months of 1886.

[j] Includes the Pondicherry Railway, except in items 2, 3, 10, and 11.

elasticity of management and the proper discrimination as to charges which is so desirable for accommodating the circumstances of traffic.

I hope I have shown good reason for pressing that the imperfections in the statistical returns obtained from the railway companies in this country should be remedied. I trust that any objection on the part of the companies to supply what is required will be removed, and that, at any rate, the Council of this Society will feel it right to exercise its influence with Her Majesty's Government to require that in any future railway Bill powers should be given to the Board of Trade to call upon the railway companies of this country to render such statistical returns as may be considered desirable in the public interests.

General Results of Working Indian Railways.

	1884.	1885.	1886.
Mean mileage open for traffic	11,114·37	12,091·27	12,548·83
Number of passengers carried	73,815,119	80,864,779	88,436,318
,, tons of goods moved	16,663,007	18,925,385	19,576,365
Passenger unit miles	3,355,746,323	3,640,337,596	3,894,076,609
Ton mileage of goods	2,761,518,023	3,319,574,447	3,388,606,208
Train-miles	39,606,785	45,422,502	45,475,834
Gross receipts .... Rs.	15,97,63,256	17,88,05,185	18,58,41,170
Working expenses .... ,,	8,06,26,463	8,77,01,962	8,84,22,951
Net receipts .... ,,	7,91,36,793	9,11,03,223	9,24,18,219

APPENDIX.

Form of Audited Return of Traffic and Mileage for the Week ending , 1887.

Receipts.

Description of Traffic.	Week ending		1887.	
	1886.	1887.	Increase.	Decrease.
Coaching Traffic.	*£ s. d.*	*£ s. d.*	*£ s. d.*	*£ s. d.*
1st class passengers				
2nd „				
Intermediate class passengers				
3rd class passengers				
Passengers' luggage				
Military baggage				
Ordinary carriages, horses, dogs, &c.				
Military „ „				
Parcels				
Special trains				
Mails—				
Haulage and hire of post office vehicles				
Special trains				
Parcels				
Miscellaneous				
Total				
Less outstandings irrecoverable				
Total coaching receipts				
Goods Traffic.				
Merchandise, general				
Military stores				
Railway materials for construction				
Coal—				
For the public				
For the railway (construction only)				
For locomotive department (revenue only)				
For other departments (revenue only)				
Revenue stores—				
For all departments, excepting coal and locomotive fuel				
Wood and patent fuel for locomotive department				
Live stock—				
Ordinary				
Military				
Rents and demurrage, wharfage, storage, &c.				
Interest on outstanding bills				
Miscellaneous				
Total				
Less outstandings irrecoverable				
Total goods receipts				

Form of Audited Return of Traffic and Mileage—Contd.

RECEIPTS—*Contd.*

Description of Traffic.	Week ending		1887.	
	1886.	1887.	Increase.	Decrease.
SUNDRY TRAFFIC.	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Electric telegraph (for private messages)				
Hire of locomotives and mileage, demurrage, and hire of vehicles—				
Coaching				
Goods				
Rent of stations, &c., jointly occupied				
Clearing accounts with other lines				
Soane Bridge tolls				
Tonse Bridge and Jumna Bridge tolls, Allahabad				
Jumna Bridge tolls, Delhi				
More Bridge tolls				
Rent				
Profits of workshops for work done for other railways, &c.				
Sale of unclaimed and damaged goods				
Unpaid or unclaimed salaries				
Excess cash				
Ferry receipts for crossing passengers when Hooghly Bridge is closed				
Miscellaneous minor receipts				
Fees on transfers of annuities, &c.				
Receipts from N.-W.S. Railway for use of the line between Gháziabad and Delhi				
Deposits of periodical ticket holders forfeited				
Receipts from branch lines for use of rolling stock				
Sale of revenue stores				
Steamboat earnings				
Proportion of charges on goods over Shalimar branch				
Total				
Less outstandings irrecoverable				
Total sundry receipts				
Total for the week				
Amount for previous seven weeks of half-year				
Total for eight weeks				
Average receipts per week for eight weeks				
Receipts per mile open, weeks ending and				
Average receipts per mile open per week for eight weeks				
Receipts per train mile, weeks ending and				
Average receipts per train mile for eight weeks				

Form of Audited Return of Traffic and Mileage—Contd.

MILEAGE.

Description of Mileage.	Week ending		1887.	
	1886.	1887.	Increase.	Decrease.
Train miles run for the public, viz.:—				
Coaching				
Merchandise				
Mixed				
Light				
Train miles run for locomotive department				
Train miles run for maintenance				
Total traffic train-mileage				

	1886.		1887.	
	Hrs	Mts.	Hrs.	Mts
Assisting engines				
Shunting and standing in steam for traffic purposes				

Description of Mileage.	Week ending 1886.	Week ending 1887.	1887. Increase.	1887. Decrease.
Miscellaneous services				
Total miscellaneous engine mileage				
Total engine mileage				
Total traffic train-mileage for previous seven weeks of half year				
Total traffic train-mileage for eight weeks ending				
Average number of train miles per week for eight weeks				
Length of line				

Form of Audited Return of Traffic and Mileage—Contd.

MILEAGE—*Contd.*

Number of Passengers, and Weight of Luggage, Parcels, Merchandise, Coal, and Railway Materials Conveyed.

Description.	Week ending 1886.	Week ending 1887.	1887. Increase.	1887. Decrease.
1st class passengers				
2nd ,,				
Intermediate class passengers				
3rd class passengers				
Total number of passengers				
	Tons. cwts.	Tons. cwts.	Tons. cwts.	Tons. cwts.
Luggage				
Parcels				
Merchandise, general				
Military stores				
Railway materials for construction				
Coal—				
For the public				
,, the railway (construction only)				
,, locomotive depart. (revenue only)				
,, other departments (,,)				
Revenue stores—				
For all departments, excepting coal and locomotive fuel				
Wood and patent fuel for loco. depart.				
Total				

Passenger Mileage and Ton Mileage of Luggage, Parcels, and Goods Conveyed.

1st class passengers				
2nd ,,				
Intermediate class passengers				
3rd class passengers				
Total				
Luggage				
Parcels				
Merchandise, general				
Military stores				
Railway materials for construction				
Coal—				
For the public				
,, the railway (construction only)				
,, locomotive depart. (revenue only)				
,, other departments (,,)				
Revenue stores—				
For all departments, excepting coal and locomotive fuel				
Wood and patent fuel for loco. depart.				
Total				

Form of Analysis of Traffic for Week ending , 1887.

Coaching Traffic.			Goods Traffic.		
Receipts from passenger traffic	£		Receipts from goods traffic............	£	
Passenger train-miles run	No.		Goods train-miles run....................	No.	
Average passenger train-mile receipts	*s.*		Average goods train-mile receipts..	*s.*	
Number of passengers carried 1 mile	No.		Tons of goods carried 1 mile, including live stock, &c.	No.	
Average sum received for carrying a passenger (taking all classes together) 1 mile	*d.*		Average sum received for carrying 1 ton (taking all classes together) 1 mile	*d.*	
Average number of passengers in a train at any one time	No.		Average number of tons in a goods train at any one time..	No.	
Average number of passenger trains per diem each way, supposing each train to traverse the whole line open	„		Average number of goods trains per diem each way supposing each train to run over the whole line open	„	
Average number of passengers passing over each mile of line daily (both ways)....................	„		Average number of tons of goods passing over each mile of line daily (both ways)....................	„	

Note.—The passenger mileage is taken at the result given by dividing the earnings of each class by the rate per mile, and adding thereto the receipts from parcels, luggage, &c., converted into passenger miles by dividing them by the average rate obtained from passengers.

Passenger Unit Mileage and Ton Mileage of Luggage, Parcels, and Goods Conveyed.

Passenger.		Description.	Goods.		
Description.	Unit Mileage.		Up.	Down.	Total.
1st class		Merchandise, general			
2nd „		Railway materials for construction			
3rd „					
Coolie class		Revenue stores..............................			
		„ coal			
Total		Total			
Nos. Tons.					
Luggage					
Parcels		Live stock, &c.............................		Total	

Chief Auditor's Office,

DISCUSSION *on* SIR JULAND DANVERS'S PAPER.

MR. G. BADEN-POWELL, M.P., was specially pleased to be able to say a few words on the paper, to which they had all listened with such interest, because it was one of special value to Members of Parliament personally, seeing that one of the great tasks for next session would be the discussion of the Railway Rates Bill. He congratulated the Society on having placed before Parliament such an excellent example of practical analysis of railway returns as was found in the appendix to the paper. If, as the author had stated, the railways of the United Kingdom in speed, safety, comfort, and convenience, were far above the railways of any other country, they must, he thought, be far advanced on the road to perfection. But he noticed one great omission; nothing was said as to the cheapness of carriage either for passengers or goods, which from a consumer's point of view he took to be one of the most important elements in the railway question. But then although they were told that the railways in England were so excellent in their management in many points, they were also told that there were no data available from any railway in the kingdom which could supply the real facts that would enable Parliament to legislate in defence either of vested interests, or of the consumer. He was perhaps rather vain to find so high an authority as Sir Juland Danvers backing up some remarks that he (Mr. Baden-Powell) and others had made last December concerning Mr. Jeans's paper,—to the effect that in England there was really no available statistical knowledge of railways to go upon. Nevertheless, the unfortunate House of Commons next session had to legislate on railways, and in the absence of sufficient information. He therefore hoped that Sir Juland Danvers's paper would rouse the public, whether interested as consumers or shareholders in railways, to provide Parliament with that amount of information which was absolutely essential to proper legislation. It would be seen from the records and the tables, that Indian railways under the skilled charge of Sir Juland Danvers and his colleagues, as many of them knew who had invested in them, had developed an amount of economy which was eminently satisfactory. While thanking the author for his valuable paper, he would add that he thought government would be exercising a very wise discretion if they at once entrusted that gentleman with the task of providing Parliament with information on British railways such as he had given in his paper with regard to Indian railways.

MR. CHARLES R. HAIG wished to make a remark on one branch of statistical railway returns which during the present agitation for free trade came somewhat nearly home to those who were engaged in commerce. Those who had observed the controversies that had been raised on the subject of the competition with the foreigner, would know that through rates were given to foreign goods imported into this country, concealing of course the rate which was actually charged for the carriage over the English lines; and if what was proposed by the author would lead to the publication by the railways of statistics which would enable them to judge what was charged for the foreign goods, it would no doubt lead to a better state of things with regard to those matters. He might best illustrate what he meant by stating what had come within his own knowledge as a wine and spirit merchant. In sending thirty cases of bottled wine from Calais to London the goods were shipped from Calais, carried by the steamer, unshipped, handled at Dover, put on the train, sent up to London, and delivered within town limits for 6*d*. a case. If those thirty cases were sent from London to Dover the cost would be at least 8*d*. That was only an example of a multitude of through rates, concealing a preferential protection of foreign goods. A case had recently come under his notice in which a gentleman, wishing to send wheat to London from Liverpool, actually shipped it to New York, and had it shipped back by steamer on the through rate, going over exactly the same line to London as it would have travelled had it only been sent from Liverpool. It was most desirable, he submitted, at this crisis when questions of fair trade were being discussed, to see that corporations such as railways, to whom special privileges, parliamentary charters, and monopolies had been granted, should not at the expense of the English producer protect the foreign producer. Undoubtedly, if the proposals of the author were properly carried out they would lead to a better knowledge of railway rates, and more particularly of those through rates in which the protection of foreign interest was concealed.

Mr. PRICE-WILLIAMS, M.Inst.C.E., said letters had been read from the chairman of the London and North Western Railway Company expressive of their regret at not being able to be present this evening; he shared that regret, and had hoped that the general managers of some of their great railway systems might have been present to give them the benefit of their views in regard to the admirable paper which had just been read; he doubted whether any valid argument could be adduced against the soundness of the views so ably advocated by the author of the paper; but if there were, he trusted they would be brought forward now and thoroughly discussed before the meeting closed. As a railway man himself, he could only say he entirely endorsed the views of Sir Juland Danvers; views which in fact for many years past he had been endeavouring to enforce in season and out of season, as much in the interest he considered of the railway companies as of the public, by trying to induce the leading railway authorities to furnish the data in their half-yearly reports advocated by the author of the paper. The ton per mile and passenger mile unit had, as the author stated, already been adopted on the Indian, American, New Zealand, and other railways, and he considered that until this unit was given for the railways in the United Kingdom, it would be impossible to determine with anything approaching to accuracy the cost of working the different classes of traffic; he had adopted a different and more detailed method than that applied in the case of the Indian railways, viz., the respective ratios of the ton per mile and the passenger mile unit; but failing a better it afforded, in his opinion, a reliable means of very closely determining separrately what the actual cost of transferring a ton of goods per mile and a passenger per mile was. He had recently made an analysis of the working expenses of the principal railways in this country, notably in the case of the London and North Western and Great Northern Railways. Through the kindness of Mr. Findlay, the general manager of the first named company, in allowing him access to the earlier half-yearly reports and other valuable data, he had been enabled to prepare a tabular statement of the receipts and expenses per passenger, the receipts and expenses per ton per mile of the goods traffic and of the mineral traffic separately, from 1860 down to the present time; and with the kind assistance of Mr. Oakley, the general manager of the Great Northern Railway, he had prepared a similar analysis of the receipts and working expenses of that railway, and inasmuch as these were based chiefly upon the companies, half-yearly reports, he thought there would be no objection to his presenting them to the Society. His mode of apportioning the expenses between the different classes of traffic was, as he had already observed, much more detailed, and certainly had not the same advantage of simplicity as that adopted by Sir Juland Danvers in the case of the Indian railways. The railway companies in this country had admittedly all the data at hand to enable the working expenses of the different classes of traffic to be accurately apportioned, not merely for the whole line, but on the different sections. Whatever slight error there might be in his own system of apportioning the working expenses, the results he had arrived at in the case of the London and North Western Railway during the long period between 1860 and 1885 were, as Mr. Findlay had admitted, reliable for the purposes of comparing one year with another, the errors in the system of apportionment being common in all cases. During his recent visit to New Zealand, through the kindness of the government railway authorities there, he had been afforded the opportunity of examining the greater part of the railways in both islands, and had also been furnished with copies of the admirable system of railway accounts which had been introduced by the general manager, Mr. Maxwell, M.Inst.C.E. The mileage of the New Zealand railways was almost exactly the same as that of the London and North Western, and he might add that in addition to adoption of the ton per mile and passenger mile unit, the traffic receipts and cost of working was given separately on different sections of the railways in both islands. The importance of this, where the gradients on some sections were much heavier than on others, would at once be realised, when he mentioned the fact that the tractive power of an engine up a comparatively easy gradient of 1 in 264 was only just half what it was on the level, or in other words the same engine with the same expenditure of power was capable of hauling twice the load on the level that it could do on that gradient. The ruling gradients on these heavy sections of the New Zealand railways was 1 in 50, where it should be remembered an engine can only haul about one-seventh of the load it could draw on the level. The cost of working these heavy grades he was glad to find was separately given, and as might be expected there was a great difference in the cost of working, and mainly due to the large consumption of fuel. The cost of fuel only on the Great Northern Railway constitutes more than one-fourth of the total locomotive expenses.[1] In addition to this there is of course the extra wear and tear of the machines and permanent way on these steep gradients. All these facts should be taken into account by railway companies in determining the traffic rates on different portions of their systems. There was another important matter he had carefully considered in allocating the cost of working the different classes of railway traffic, and that was the return empty mileage, which amounted in the case of the minerals to as much as 90 per cent., and to 10 per cent. in the case of goods traffic. He might further mention that notwithstanding this large amount of unprofitable mileage, the total mineral traffic working expenses per ton per mile on the London and North Western Railway for the year 1884 amounted on an average to only 0·1687*d.*, and the gross receipts to 0·4224*d.* per ton per mile; while the mineral traffic expenses on the Great Northern Railway for the same period were 0·1386*d.*, or just about one-seventh of a penny per ton per mile, and the gross receipts to 0·2791*d.*, or somewhere between a farthing and a third of a penny per ton per mile, showing a net profit of 320,359*l.*, or over 50 per cent. on a total of 4,875,795 tons of coal carried by that company in the year. Nothing in his opinion more clearly showed the utter fallacy of the train-mile principle, to which the author of the paper had drawn attention, than the fact of all this empty train mileage, if the mineral traffic was used at present as on all English railways for the purpose not only of arriving at the average receipts and working expenses of the mineral traffic, but of the goods traffic also, with which it had nothing earthly to do. The absurdity of comparing train-mile receipts and expenses on different railways where the coal traffic varied was equally manifest. The valuable statistics given in the paper clearly showed the practicability of allocating the expenses by a very simple, and he believed reliable method; he had had the opportunity of roughly comparing the results arrived at in the case of the East Indian railways with his own obtained by a more detailed method, and he found they agreed very closely. He considered that the element of speed ought to be taken into account in allocating the running expenses of the passenger and goods traffic in the increased ratio of the speed as he had done. The item of wages constituted considerably more than one-third of the entire locomotive expenses,[2] but taken altogether the method adopted by the author was sufficiently near for all practical purposes, and he trusted it would soon be adopted by the railway companies in this country, enabling them to determine separately and within very narrow limits of error the actual cost of carriage of the three great branches of railway traffic, viz., passengers, goods, and minerals. The difficult and complicated question of determining the terminal charges alluded to in the paper had engaged a great deal of his attention, and he considered there was much force in Sir Rowland Hill's remark on the subject to which the author of the paper had referred. The result of his own investigations showed that the cost of railway transport resolved itself into a question of the two terminals and a line charge. By a method of his own he had been able to ascertain the average load of each class of traffic on a railway; with this given, the question of determining the amount of the two terminals becomes a comparatively easy matter, regard being paid to the distance, gradients, and class of stations between which the traffic passed. In investigating some years ago the cost of telegraphic traffic he had found that it similarly resolved itself into a question of the cost of the two terminals and the line charge; and the result of his investigation proved that an average cost of the line charge for an average load was just one-third of the whole message, and that for each terminal amounted to about the same; and he believed that on every system of railway where there was a fair average traffic mileage lead, the same ratio between the terminals and line charge would be found to obtain. The present method of charging railway rates was, as Sir Bernhard Samuelson had said, quite haphazard, and he had never met any one yet who had been able to furnish him with data which would enable a particular rate to be determined by any reliable principle. In the majority of cases the rates were confessedly determined by certain precedents, and by what the different companies concerned could get out of it. He had great pleasure in handing in the analysis he had referred to of the London and North Western Railway receipts and expenses from 1860 to 1884, which he had prepared chiefly from the company's half-yearly reports.

---

[1] Great Northern Railway locomotive expenses, 1884: coal, 134,001*l.*; total locomotive expenses, 510,246*l.*

[2] Great Northern running expenses, 1884: wages, 181,808*l.*; total expenses, 510,246*l.*

Sir ALEXANDER M. RENDEL, K.C.I.E., said he was associated with Sir Juland Danvers in early days in the production of the statistics mentioned in the paper. He did not know of any railways in the world that were so economically worked, or paid a better rate of interest on their capital at such low charges as the Indian railways, and he was satisfied that it was largely due to the use of those statistics; the result of which was that they had increased their train loads so immensely, that they could carry at a very low cost, and therefore at very low rates. On the East Indian Railway at the present time the charge per ton per mile at the present rate of exchange was barely a halfpenny, while the average cost of carrying a ton a mile was less than a sixth of a penny. He supposed the average charge in England was not less than a penny, and the average cost not less than a halfpenny. That was due to the fact that on the East Indian railway the average load of a goods train was about 200 tons, whereas here it was not more than 60 tons. If the train loads on the East Indian Railway were about the same as in England, he did not suppose it would pay one-third of what it did. Instead of paying 8 or 9 per cent. it would not pay more than 2½, because they would be compelled to increase the charges, which would shut out a great mass of traffic that was now carried. It was rational to suppose that if the same class of statistics were in use the same results would be obtained. Ever since the American railways had published that form of statistics their average charges had been going down, the train loads had been going up, and their working cost going down. That was why the American railways could carry goods at four-tenths of a penny, whereas in England they were obliged to charge a penny.

Mr. E. H. CARBUTT (President of the Institution of Mechanical Engineers) said that it had been his good fortune to be connected with Sir Juland Danvers, and he had moved in the House of Commons for a Committee to be appointed to inquire into the question of Indian railways with a view to prevail upon the Government to expend very much more money in increasing them. Undoubtedly the cost of English railways was much greater than the cost of those in India, which had not to incur the large preliminary expense of a parliamentary fight. It had been stated, and he believed correctly, that the cost of a parliamentary fight in England had amounted to more per mile than the construction of railways in Germany. That being the case, it was hardly remarkable that rates should be higher in England than elsewhere. Besides nobody would here tolerate the slow rate of speed with which goods were carried in India. A Manchester merchant would expect his goods to be in the London market the following morning, and if they were not delivered within one hour of the prescribed time he would probably make a claim against the company. The East Indian railway had train loads running 600, 800, and 1,400 miles at one stretch, whereas in England 200 miles was rarely exceeded. The same of course applied to passenger traffic, on account of the great number of stations. He trusted that better data would soon be forthcoming, but at present they must not be disappointed that rates were higher here than in other countries. They could not expect the facilities of having 40 trains a day between Manchester and London, and 60 a day between Leeds and Bradford, and at the same time have the cheap rate that was obtained in other countries where comparatively few trains were run. Being a Midland man himself, he was glad that the Midland Railway had taken the lead in showing that reduced charges were a benefit not only to the company but to the district through which its line passed. A reduction in passenger rates undoubtedly induced people to travel about and encouraged them in looking after trade, and caused manufacturers to enter into severer competition in order to maintain the position they ought to hold in the country.

Major-General E. C. S. WILLIAMS, R.E., C.I.E., thought that they must be specially careful in the application of the average cost of carrying a passenger or a ton of goods a mile. An average could only be applied to an average case. Until, however, they arrived at an average working cost, it was impossible to know at all how they were charging. He took it that the main point of the paper they had just heard was the imperfection of the train-mile unit. With such *pseudo* unit the first question to be asked is, "what is a train-mile?" Sir Juland Danvers had answered that question. He had shown that the number of tons in a goods train varied on the broad gauge railways of India from 85 to 186 tons; that is to say, a train-mile varied from 85 to 186 tons of freight, besides the dead weight of wagons, brake vans, engine and tender, carried a mile. On the metre gauge it varied from 54 to 85 tons of freight. He did not think therefore that anyone who was prepared to fight for that unit could stand up and say that it conveyed anything definite to the mind. If a proper unit were once adopted on English railways, there would be no difficulty in settling the details requisite to work out the average cost. In arriving at it the question of speed was an important detail, for speed meant more coal and better maintenance; but on the other hand the expenditure on the running staff was less. The fixed or standing expenses was another matter that called for attention. A common plan once arrived at, however, for the division between coaching and merchandise traffic of the expenses of the various departments, the working cost could be easily found. There was an enormous amount of dead weight hauled which proper statistics brought out in strong relief. In every passenger train for every 12 tons carried only 1 ton consisted of passengers, the other 11 tons being dead weight, and on many of the English railways he believed it was more than that. For every 3 tons of goods carried only 1 ton was freight. He had no doubt that much good would result from the adoption of the ton-mile unit; but to be of real use as a check on the working it was of course necessary to split up each large railway system into sections, as is done in the United States, and to make due allowance for the effect of competition in this country, the final result of which is increased facilities and conveniences to the public almost regardless of cost to the shareholder. One speaker had referred to the desirability of discriminating between mineral and merchandise traffic; that he thought was very important. It used to be done on the Indian railways previous to 1880, even with their comparatively insignificant mineral traffic, and with the advantage of showing that, notwithstanding the lower rates charged to the public compared with those charged for merchandise generally, the profit was large; and the margin for even lower rates considerable. They also used to discriminate between the different classes of passengers, and they found that the first class passenger was an exceedingly expensive person; in fact the agent of one of the Indian railways used to declare that it would pay the company to present the first class passenger with his fare and let him depart. This could not however apply to England, where there was a very considerable first class traffic. Another speaker had referred to the effects on working expenses of the heavier first cost of the English railways compared with the Indian railways. On this point it was only necessary to say that, whether the land for a railway cost more or less, or was given free, the actual cost of working the traffic could not be affected by it. Working cost was dependent on capital cost in this way only, viz., that other things being equal the higher the construction standard of a railway the cheaper it should be to haul traffic over its rails. But the question is not whether Indian railways are worked for less than English railways, but what is the amount of *work* done in carrying the traffic on English railways—a point on which there is at the present moment the most profound ignorance—and what it really costs to do that work, expressed in intelligible language. The first step to this result is the adoption of the units advocated by Sir Juland Danvers.

Mr. H. OAKLEY (General Manager, Great Northern Railway) said he had been very interested in the paper which had been submitted to the Society, but if the author or any one else expected to attain any very marked result in English railways by working out the principle of a ton-mile unit or passenger-mile unit, he thought they would be very much mistaken, because, as General Williams had very properly said, no average could be applied to the trade of this country. First of all, no commercial man or passenger would for a moment stand the speeds and the delays that were inseparable from any attempt to carry goods or passengers in the most economical manner. Every district had its peculiarities. Owing to the conformation of certain parts of the country an engine could only carry 10 or 15 waggons, whereas in flat districts such as Lincolnshire a train might consist of as many as 45 waggons. If they took the ton-mile on each individual section of the line, and saw what was earned, some reasonable approximation might be arrived at, but practically for every district there would be a varying ton-mile. The train-mile had been sneered at, and some gentlemen had said that railway managers knew nothing of the reasons that influenced them in fixing rates. The gentleman who dealt in wine had complained that he could get his wine carried from Dover to London cheaper than from London to Dover; but he entirely forgot that a port was a place of concentration, and that every train coming from Dover to London would probably be full, and that there would be large loads in each truck. On the other hand wine sent from London to Dover would go in small quantities, and each particular article would have to be separately invoiced and dealt with, and separately delivered, so that every element of cost except the mere carriage between London and Dover would be increased. It had also apparently been forgotten that the wine could be sent from Calais to London by boat, and it therefore became a question whether the railway company should either carry the goods for what it could get or not carry them at all. The same applied throughout the country. Being a sea-girt country, every port had its claims to the trade. The difficulty that a railway manager had to contend with was not so much in fixing an equitable rate, as in reconciling as best he might the conflicting claims of the district he had to serve. He was not at all surprised at the low rate at which minerals were carried on the continent and in India. In England, in consequence of the pressure of traffic, minerals had to be carried nearly as fast as passengers, 18 miles an hour was about the rate at which all such trains were taken day and night, being watched every 2 or 3 miles of the journey by wide awake signalmen, pushed into the manufacturer's sidings, and the empty waggons hauled back to their destination. Practically every mineral train meant double mileage. The same applied to a great deal of the metropolitan and suburban traffic. They might take an average of a ton-mile or a passenger-mile for metropolitan traffic, but for mineral trains and all goods trains they would have to subdivide it into mixed trains, because the goods and minerals in some districts had to go together, there not being enough of either separately to make a train. The speed at which the trains were run had also to be fitted into the account. Goods were taken at the packers at 5 or 6 o'clock in the evening, and were delivered at the manufacturer's doors, a distance of 200 miles, by 9 o'clock the following morning. Was there any work of the sort done anywhere else in the world? The rates included cartage, collection from the packer, loading and haulage by railway, and delivery in town. The railway companies in England were not merely haulers of traffic, but were practically intermediaries in trade. It certainly was hard at times to hear the educated *qua* railway public sneer at railways, and one would almost think it was the general opinion that every man but a railway manager was fitted to manage a railway. The problem to be dealt with was not the mere question of calculating the average receipt of a ton-mile or a passenger-mile, but what work had to be done for the money, and what responsibilities and risks had to be incurred, and comparing the cost of working here and abroad. If worked out, the element of wages alone he believed would more than justify the difference in cost between working a railway in England and in India. He had known the author by reputation for many years, and he had attended for the purpose of hearing how a man of his experience and talent would put the case for the ton-mile. It had been tried on the Great Northern Railway, but the diversities of traffic, the pressure of competition, and the need of speed, had blown the average theory to the winds. To give some idea of the ramifications of the question of rates, he might mention that on the Great Northern Railway alone there were 13 million separate rates between towns on their own system and other towns all over the country. He was quite sure that if Sir Juland Danvers or anybody else could put before them a practical way by which they could see after reasonable consideration a more facile way than was now possessed of arriving at rates, they would vote him a statue as being one of their greatest benefactors.

Mr. Edmund Kimber confessed that although he had carefully studied the tables, he could not exactly understand what a "train-mile" so called was. The author had stated that last year 914 millions of passengers were carried one mile by the East Indian Railway at a cost of 292,834*l*. He presumed that the author divided that by the 914 million passengers and arrived at the three-tenths of a farthing per mile. They were afterwards told, however that that was only an approximation to the unit. That being so, he confessed there must be exactly the difficulty which Mr. Oakley had asserted, namely, that in dealing with English railways there was in fact no possibility of arriving at anything like a subjection to the ruling of the unit. Although he admired the ability with which the paper was written, he still thought that the unit would be thrust to the winds in India as much as it had been in England. Mr. Price-Williams had said that if railway companies would give all the data, it only needed an official like the author to be put into the Board of Trade for the purpose of working out the unit from those data. In that case perhaps some data could be given with regard to the future prospects of work from past experience. Looking back for the last twenty years to the applications to Parliament for private bills for railways, it would be found that they were continually on the decrease, and for the simple reason that England had nearly all the railways made to meet its wants. There was not, he thought, a single line that could now be made in any part of the country which in two years would pay 1 per cent.; and it would take years and years before it could pay 5 per cent. Englishmen must seek for their enterprises and investments in other countries. The great merit of the paper, with the calculations, was that it would enable them to know what to avoid, both here and in India; and would give them experience in the construction and working of railways in a quicker way than could before be obtained.

Mr. H. Tennant, Manager, North Eastern Railway, said he greatly admired the paper from the standpoint of the author, but it was important to remember how exceedingly difficult it was to compare two things which were not alike. He thought the railway systems in India and in Great Britain were about as unlike as any two things could well be. He was much struck by the observations of Sir Alexander Rendel, when he spoke of the advantages derived in India from the knowledge gained by statistics of the kind dealt with by Sir Juland Danvers. He understood Sir A. Rendel to say that they were enabled in India owing to such information to increase the train loads, and to diminish the train mileage. If that were so, then they seemed in India to be able to manage exactly as they liked. In England there were many determining circumstances besides statistical results. A grocer, for example, instead of keeping a large stock, wrote or telegraphed to Glasgow or other places, and expected to receive his supply, say of sugar, by the next market day; and it must be conveyed and delivered whether any other truck was going in the same direction or not, it could not be kept waiting for a full train. Any comparison of the working of one railway with another would be most misleading. On his line, for instance, carrying 30,000,000 tons of goods and mineral traffic in a year, the cost per ton per mile might be very high owing to so many millions of tons being carried for a very short distance, whilst on the Great Northern the rate of working per ton per mile would be much less owing to the greater quantity carried a much greater distance. The results of the proposed statistics would not therefore afford any proof that the one railway was as well or better managed than the other. If the advice that had been given with regard to non-paying traffic were followed, many branch lines might have to be closed—a result which would in this country not be tolerated. With reference to the remark of a previous speaker, it was idle to suggest that English railway companies had any love for the foreigner. They did their best to aid Englishmen in every department of their trade and commerce.

The whole question of foreign traffic assumed a different complexion when understood from what it did in newspaper paragraphs. It was a matter solely of competition—in other words how goods could best be dealt with so that the railway of one company or another should get a share of traffic which, but for special arrangements, they might lose. With regard to the illustrative statistics of Mr. Price-Williams, he had expected that some practical conclusions would have been advanced, but that did not appear to have been done.

Mr. PRICE-WILLIAMS in reply to Mr. Tennant's remark that he had failed to give them the result of his analysis of the London and North Western Company's working expenses, said that he had not done so simply because he did not like to weary the meeting with a lot of dry figures, but as briefly stated the result of his investigations showed that since third class carriages had been attached to all trains, and the second class carriages had been abolished by the Midland Company, the first and second class traffic of the London and of most other railways had been carried at a loss; that the goods traffic as a whole paid exceedingly well; and further, that the coal traffic, handicapped as it was with its 90 per cent. of return empty mileage, was on the London and North Western, as on the Midland and Great Northern Railways, yielding a large profit of more than 50 per cent.; full details however would be found in the analysis he had handed in. He ventured to think that both Mr. Oakley and Mr. Tennant in their remarks had failed to meet the main points urged in the author's paper, viz., that it was a radical defect in the present system of railway accounts in this country that no means were afforded of ascertaining the cost of transport of the various classes of traffic.

Sir JULAND DANVERS, in reply, said that notwithstanding the difficulties pointed out by Mr. Oakley, he had failed to be convinced that it would be impossible to arrive at an average which would be of practical use to the railways of this country. Such an average would of course be considered intelligently and in connection with the circumstances of each case, and not taken as arbitrarily fixing a unit upon which the rates should depend. He would ask Mr. Oakley and Mr. Tennant, instead of dwelling on the difference between English and Indian railways, which everybody admitted, to draw a comparison between the statistics furnished by English and American railway companies, the latter of which gave particulars not only of a main line, but of parts of a line. He thought therefore that the example of America, where much the same difficulties existed, might be usefully followed in England. The managers connected with Indian and American railways had acknowledged the value of the information in question, and admitted that they had been influenced by it in their decision as to the rates. He fully recognised the extreme skill and ability that had long been shown in the management of the traffic on English railways; but his complaint was that no opportunity was given of comparing the cost with railways in other countries or with each other, or of ascertaining whether the same accommodation could not be obtained at less expenditure.

PROGRESS, ORGANISATION, *and* AIMS *of* WORKING CLASS CO-OPERATORS.

By MR. BENJAMIN JONES, *Manager of the London Branch of the Co-operative Wholesale Society, Limited.*

[Read before the Royal Statistical Society, 17th January, 1888.
FREDERICK HENDRIKS, Esq., F.I.A., a Vice-President, in the Chair.]

CONTENTS:

	PAGE		PAGE
I.—The Retail Distributive Societies	34	IV.—Land and Building Departments	42
II.—The Wholesale Distributive Societies	38	V.—Penny Banks	43
III.—Co-operative Productive Societies	40	VI.—Educational Work	44
		VII.—Organisation	47
		VIII.—Aims	50

I HAVE been asked to give an account of the working-class co-operators of Great Britain.

The following figures, extracted from the report of the Co-operative Congress of 1887, but rearranged, and the supply associations eliminated, show the position of co-operative societies at the end of 1886:—

Co-operative Societies in 1886.

Description.	Distributive Societies.		Productive Societies.	Totals.
	Retail.	Wholesale.		
Number of societies	1,331	2	66	1,399
" members	809,417	1,009 societies	22,701	833,127
	£	£	£	£
Share capital paid up	8,049,654	326,913	552,814	8,929,381
Loan capital	861,918	809,257	210,287	1,881,457
Reserve funds	337,546	58,625	17,358	413,529
Land, buildings, and fixtures	3,791,345	372,084	406,688	4,570,117
Written off land, &c., for depreciation during 1886	153,275	20,725	21,145	195,145
Investments in other societies and companies	2,152,987	7,294	18,744	2,179,025
Value of stock-in-trade end of 1886	2,520,132	576,735	290,487	3,387,354
Goods sold during 1886	20,975,374	7,080,331	1,551,203	29,606,908
Nett profits during 1886, after paying interest on shares in the distributive societies	2,819,081	132,292	62,100 & loss 874	3,013,473 and loss 874
Grants to educational purposes	22,083	337	16	22,436
Grants to charitable purposes	8,768	1,130	165	10,063

I.—*The Retail Distributive Societies.*

The retail distributive societies vary considerably in size. One, in Monmouthshire, had only 7 members in 1886, with sales during the year of 120*l.*; while a London society's sales for the year amounted to only 79*l.* Leeds is the largest society. At the end of 1886 it had 23,985 shareholders; its sales for the year amounted to 480,204*l.*, its share capital to 251,235*l.*; and its profits for the year were 52,833*l.* Table I in the Appendix gives details of 40 retail societies whose sales in 1886 exceeded 100,000*l.*, and shows their progress as compared with 1867 and 1876. These details are extracted partly from the "Wholesale Societies' Annual "for 1888," partly from the Co-operative Congress reports, and partly from the registrar's returns:—

The progress of these large societies has been very irregular, and there are some very great differences in the proportions of shares, sales, and profits to the number of members. The difference in capital is to a certain extent caused by the refusal of many societies to accept more than a limited amount from any one member; this limit being much below the statutory one. The reasons for this are, that only a comparatively small amount is needed to conduct retail businesses, and the societies dislike the risk and responsibility of holding and finding investments for surplus capital, while the charges for interest reduce the amount of net profit available for dividends. In Oldham the two societies have successively reduced the limit to 100*l.*, 50*l.*, and 30*l.*, at which it now stands; and the local leaders urged their members to invest their savings in local industries, such as the spinning mills, instead of expecting the retail societies to do it for them. The difference in the amount of sales in proportion to the number of members is not so easily explained. Something is due to the rate of wages in a locality, but more is owing to the size that a society has attained in proportion to the size of its district, and which usually measures its power to rival, or exceed, the facilities offered by the private tradesmen of the district. Then, in some districts, the people produce for themselves bacon, potatoes, and similar articles, while in other districts they do nothing individually. Medium sized towns seem to obtain a much larger trade per head than do Manchester and Leeds, when they are purely manufacturing towns, but when they are mixed with a well-to-do residential population, like Lincoln or Plymouth, the difference disappears.

The following table shows the retail societies grouped according to the amounts of their trade, and according to the localities in which they are situated:—

Retail Societies, Grouped according to their Districts and the Amount of their Sales in 1886.

Localities (Grouped into the Sections of the Co-operative Union).	Number of Societies whose Annual Sales in 1886 were									
	Under £1,000.	Over £1,000, under £5,000.	Over £5,000, under £10,000.	Over £10,000, under £20,000	Over £20,000, under £30,000	Over £30,000, under £40,000.	Over £40,000, under £50,000	Over £50,000, under £100,000.	Over £100,000.	Totals.
Scotland	15	115	76	52	17	7	10	11	1	304
North of England, including Northumberland and Durham	7	38	23	29	11	7	6	13	8	142
North-West of England, including Lancashire and Yorkshire	29	135	104	82	26	11	18	21	25	451
Midlands	46	78	31	22	5	3	2	1	3	191
South of England	58	64	24	15	3	6	—	3	1	174
West „	15	33	11	5	2	—	—	1	2	69
Totals	170	463	269	205	64	34	36	50	40	1,331

Note.—Fifty-three societies are included in the hundred and seventy which are tabulated as having less than 1,000*l.* a-year of trade, because no particulars were obtainable from them by the officials of the Co-operative Union.

The businesses conducted by these societies become more varied as they increase the number of the members. At first starting their capital is limited, rarely exceeding 1*l.* per member, and oftentimes it is very much less than this. It therefore takes all they possess to carry on one small branch of trade. It is a common practice for a society to begin by selling one simple article, such as tea, which they buy ready made up in quarter or half-pound packets, and distribute, without any expense for rent or wages, among the members. The difference between wholesale and retail prices is so palpable to the dullest individual that it stimulates others to join the society, so that it soon becomes large enough to commence a regular business.

Besides the want of capital, there is another obstacle in the way of societies commencing business in several trades at the outset. Some trades require a much larger number of supporters to secure success. It is unwise to enter into them until a society's membership is large enough to ensure this support; and it would be equally unwise to abstain from starting business altogether until this large number of members could be obtained. Hence those trades that are easiest to manage, and require the support of a comparatively small number of people, are the first to be started. The officers gain experience. The success which is obtained creates confidence, and draws members in: and the profits enable a society to go on step by step, extending its trading operations, until the whole area of wants of a working-class family are covered.

Societies usually begin their careers with the grocery and provision trade. They then add boots and shoes, earthenware and hardware, and commence baking their own bread. They then go on to supply butcher's meat, and to start drapery and tailoring departments. Some have opened milk shops, greengrocery stores, and jeweller's shops; others have their coal yards and wharves; possessing railway waggons, canal barges, and sea-going colliers. Some societies have gone into farming, and have either rented or purchased land, the produce of which is intended to be consumed by their members.

The larger societies do not content themselves with one group of premises. They establish branch stores, in order that their members may be more easily accommodated. Out of a total of 1,334 societies, 360 have become sufficiently large to have branches, and the total number of branches belonging to these 360 societies is 1,464. Table II in the Appendix shows how they are distributed.

A considerable amount of production is carried on by the retail societies, which does not usually show in the statistics of co-operative production, and is not shown in the figures of productive societies that I have given. This is caused by a difficulty in getting the necessary information from all the societies, and by the difficulty of deciding where production ends and distribution begins. For instance, the general secretary of our Co-operative Union includes as a productive society one that grinds corn, bakes the flour into bread, and sells it to its members. But another society which does nothing but bake bread, and sell it to distributive societies, to be in turn sold by them to their members, is classed by him as a distributive society. I think that baking is just as much an act of production as is corn-milling; and that making up a bonnet is also just as much an act of production as is weaving calico. Three years ago I obtained statistics from the retail distributive societies of the amount of boot and shoe making, tailoring, dressmaking, baking, and similar manufactures carried on by them. These I classed under the head of domestic production, to distinguish them from more elaborate organisations such as factories and corn mills. The totals of these returns gave me the following figures:—

	Domestic Production by Retail Societies in 1883.
Capital employed	£120,000
Number of employés	4,000
Annual production of retail societies (without their corn mills)	£900,000

As the total retail trade of the societies is now 20 per cent. greater than when these figures were compiled, it may reasonably be assumed that domestic production has increased in a similar ratio, so that we should have for the year 1886 a production of about 1,080,000*l.*

There are two more items of production carried on by retail societies that must be noticed. In addition to the thirteen corn mills included in the list of productive societies, there are thirteen societies that include corn-milling among their businesses. Like their other production, we have no regular returns for these mills; but a calculation made by me in 1884, from special returns, gave the total production of co-operative corn mills at 1,800,000*l.* for the year 1883, of which 500,000*l.* were produced by the retail societies' mills. The value of flour has gone down since then, and the number of mills is still the same, but the production has increased. The value of the production for 1886 will probably not exceed the 500,000*l.* produced in 1883, and may be less than this.

The other item is farming. During the last few years there have been numerous discussions among co-operators on this subject, the prevalent opinion being that the depression in the value of land was favourable to attempts on the part of societies to become possessors, and to cultivate it in such a manner that most of the produce could be consumed by the members of these societies. Table III in the Appendix gives a list of places where it is known that these attempts are being made, and also gives details of acreage, rent, &c., where I have obtained the information. The figures are mostly from the Congress Report of 1887. The total acreage thus occupied is 1,684½ acres.

The total annual production of retail societies will therefore amount to 1,600,000*l.*

Two societies have been formed for the purpose of holding land and letting it as allotment gardens to their members. One is in connection with the Banbury Society, and owns the freehold. The other is at Norwood, Surrey, and leases 5½ acres from the Ecclesiastical Commissioners. There are seven co-operative farming societies. Two of these are at Assington; one having been organised by the late Mr. Gurdon; while the other is a new society which was formed to take up the work of the other old association when it came to grief. Of the first no details are obtainable, but the new society has shown a loss during each of the three years it has been working. Two others, the Radbourne Manor Farm and the Ufton Hill Farm, owe their existence to the generosity of Mr. Bolton King; and another at Harlestone in Northamptonshire has been started by Earl Spencer. The remaining two are as yet without farms. They are being formed in Scotland and Lancashire respectively, by the combined subscriptions of individuals and co-operative societies, but neither has, as yet, raised all the necessary capital. One has obtained 1,300*l.* towards 2,000*l.* required, and the other has obtained 1,200*l.* towards 3,000*l.* required.

II.—*The Wholesale Distributive Societies.*

There are only two co-operative wholesale societies. The first of these was registered in 1863, and commenced business in Manchester in March, 1864. It originally had the very long name of the North of England Co-operative Wholesale Industrial and Provident Society, Limited; but as its business extended it gradually contracted its name, first, by eliminating the words "Industrial and Provident," and then by striking out the local designation of "North of England." Among co-operators it goes by the familiar title of "The Wholesale."

The Scottish Co-operative Wholesale Society was started in 1868 on almost the identical lines of the older society. The founders would have preferred to have had a branch of the English "wholesale," but the latter was then too cautious, or timid, to take what seemed to be a very gigantic advance. Although the two societies are thus legally separate, they work together in complete harmony, and combine in a number of ways for obtaining supplies of goods.

The Tables IV, V, VII, and VIII in the Appendix, extracted from the "Wholesale Societies' Annual for 1888," give details of the growth of these societies. The following figures show their position in 1886:—

	The Co-operative Wholesale Society.	The Scottish Co-operative Wholesale Society.	Totals.
Number of members in the shareholding societies	558,104	59,874	617,978
	£	£	£
Total capital	944,379	333,683	1,278,062
„ sales for the year............	5,223,179	1,857,152	7,080,331
Net profits „	83,328	50,398	133,726

It will be noticed in the chronological statements (see Appendix, Tables IV and VII) that there have been numerous branches and departments opened. In Ireland there are eight branches. These are for buying butter and eggs. Similarly the New York branch was started to enable us to buy American cheese, bacon, lard, flour, &c.; the Copenhagen branch, for the purchase of butter; and the Hamburg branch, for the purchase of butter and general produce. The English and Scotch branches, depôts, and sale rooms, have been opened to facilitate the sale and despatch of goods. At the Crumpsall Works miscellaneous articles are produced, such as biscuits, sweets, jam, black lead, soft soap and dry soap. The other items in the statements explain themselves.

The Scottish Wholesale Society make all their purchases of the class of goods supplied by the branches through the foreign and Irish branches of the "wholesales." All their tea trade is transacted through the London tea department; and their Liverpool goods are supplied by the Liverpool purchasing department. The English "wholesale" in their turn purchase their Greenock sugars through the Scottish "wholesale," and all sundry purchases are conducted in a similar reciprocal manner.

In each of the last two years a buyer and a committeeman have visited Turkey and Greece to buy currants, raisins, and figs. These visits have been very profitable. Their purchases on their last visit amounted at English market prices to 90,000*l.* At intervals similar visits are paid to the continent for the purchase of various classes of goods, such as the product of the French woollen mills, apples from the banks of the Rhine, and flour from Hungary.

The English "wholesale" have recently taken powers to commence currying and tanning leather. They propose to carry on these trades at Heckmondwike. A corn mill, to cost about 70,000*l.*, is also being erected on the river Tyne. The Scottish "wholesale" have recently purchased a plot of twelve acres of land in the suburbs of Glasgow, on which they intend to concentrate their workshops. A beginning has been made with the erection of a boot factory.

The two "wholesales" have both entered into the shirt making and tailoring trades, but the details of these are not separately published. They also do a considerable amount of their building operations, as they believe that by purchasing materials and employing their own men they obtain better results than when they let their work to contractors. The two societies employ just over 3,000 people.

The following table shows the business done by the purchasing branches and works of the "wholesales" during the year 1886:—

Purchasing and Productive Branches of the "Wholesales."

Name of Department.	Amount of Business done in 1886.		
	By Purchasing Departments.	By Works.	Total.
	£	£	£
Copenhagen	568,176	—	—
New York	463,195	—	—
Tea and coffee (London)	430,192	—	—
Irish branches (except Inniskillen)	415,011	—	—
Hamburg	182,916	—	2,059,490
Leicester boots	—	122,463	—
Glasgow ,,	—	81,904	—
Heckmondwike boots	—	22,231	—
Crumpsall biscuits, &c.	—	23,534	—
Durham soap	—	15,886	—
Glasgow shirts, tailoring, knitting, &c.	—	12,722	228,740
			2,288,230

Here it will be advisable to notice a peculiarity of our co-operative statistics. If a society simply purchases goods, and sells them, it counts as so much trade done. But if it extends its connections by either producing the articles it sells, or by establishing branches or departments for doing work that has previously been done for them by private firms, such as the work done by the New York or Copenhagen branches, it does not show the figures in its accounts as a growth of trade. Nevertheless it is just as much a growth of trade, and a displacement of the private trader; and if the operation had been effected by a separate society it would have been counted in our statistics. Therefore to arrive at the total figures of co-operative businesses these amounts of the purchasing branches and works must be added to the "wholesales'" statistics; and in a similar manner the productive figures of the retail societies must be added to their distributive totals. The results would be as follows:—

	Distributive Societies.		
	Retail.	Wholesale.	Totals.
	£	£	£
Sales during 1886	20,975,374	7,080,331	28,055,705
Workshops, &c.	1,600,000	2,288,230	3,888,230
	22,575,374	9,368,561	31,943,935

III.—*Co-operative Productive Societies.*

In 1886 there were only 66 productive societies. As they are so few, I venture to give in Table VI of the Appendix the details of these societies so far as they were obtainable. They are from the Co-operative Congress Report, 1887.

The total co-operative production for the year 1886 was as follows :—

	£
By productive societies	1,551,203
„ wholesale „	228,740
„ retail „	1,600,000
	3,379,943

The number and importance of the productive societies is not great. The more important of them are the corn mills, whose annual turnover is 1,075,839*l.*; this only leaves 475,364*l.* for all the remaining 48 societies.

The Wholesale Annual for 1883 gives a list of 224 co-operative productive societies that had been registered and had become extinct between 1850 and 1880. The following is a classification by trades :—

Number of Societies.	Trades, or Makers of	Number of Societies.	Trades, or Makers of
15	Shoes.	3	Plumbers, painters, &c.
4	Boxes, baskets, &c.	8	Watches, &c.
8	Firearms.	9	Woollen cloth, &c.
3	Flannel and blankets.	7	Horse shoes, &c.
4	Hats and caps.	13	Joiners, masons, &c.
10	Hosiery and elastic.	3	Brewers.
20	Miscellaneous textiles.	1	Brushes.
4	Nails, clog irons, &c.	5	Cabinets.
6	Silk goods.	1	Cheese.
30	Corn milling.	9	Coal mining.
1	Cutlery.	7	Printers, publishers.
7	Machines, tools, &c.	2	Saddlers and collars.
5	Farmers, gardeners.	9	Ships and boilers.
6	Iron, &c.	15	Tailors and clothiers.
10	Miscellaneous.	2	Tobacco.
2	Paper and stationery.	3	Wire and cards.
1	Plate locks.		
	Total	224	

Thirty-seven of these were registered between 1870 and 1880; 106 between 1860 and 1870; and 49 between 1850 and 1860. The remaining 32 have not got the date of registration. Few of these ever made a start; registration was all that was done by most of them. The efforts of co-operators are however now meeting with more success, as will be seen by comparing Table IX in the Appendix which gives a list of the productive societies in the registrar's return for 1876, with the list of societies already given for 1886 in Table VI.

To see how we have progressed we shall have to separate the corn mills from the other productive societies, because the fall in the price of flour has been so great as to make an immense difference in the value of the output of the mills.

Co-operative Corn Mills in 1876 *and* 1886.

Year.	Number of Mills.	Number of Members.	Shares.	Loans.	Stock.	Sales.	Profits.
			£	£	£	£	£
1876................	12	15,164	292,468	47,735	161,578	1,138,278	56,490
'86................	13*	16,515	390,228	60,384	183,159	1,075,839	43,264
Increases........	1	1,351	97,760	12,649	21,581	—	—
Decreases	—	—	—	—	—	62,439	13,226

* One society has not made a return.

Co-operative Productive Societies in 1876 *and* 1886, *excluding Corn Mills, excluding those that made no returns.*

Year.	Number of Societies.	Number of Members	Shares.	Loans.	Stocks.	Sales.	Profits.
			£	£	£	£	£
1876............	29	4,537	128,257	107,805	68,327	301,078	17,657
'86............	48	6,186	162,586	149.903	107,328	475,364	18,836
Increases....	19	1,649	34,329	42,098	39,001	174,286	1,179

IV.—*Land and Building Departments.*

Very many co-operators take advantage of the facilities offered by ordinary building societies to become the possessors of their houses. When equitably managed these building societies are to all intents and purposes co-operative; but the somewhat heavy fees, together with the necessity of a working man borrower having a certain proportion of the purchase money ready before he could obtain an advance, led co-operators to consider how they could best help men who were unable to meet these requirements. This caused an alteration in the law in 1871, which enabled societies to buy, hold, hire, or sell land and buildings, and to engage in building operations with greater freedom in some respects than under the Building Societies Acts. A number of land and building societies have been registered under this Act; and a number of retail distributive societies have formed what are called building departments. In the registrar's return for 1885 there is a list of sixty-nine land and building societies registered under the Industrial Societies Act. Fifty-eight of these made returns showing outstanding advances on property of 306,147*l.* The registrar gives no details of the advances made by the distributive societies; but in the Wholesale Society's Annual for 1885 there are some statistics of what had been done by them up to 1884. Ninety-six societies made returns, and they showed a total sum of 685,006*l.* that had been advanced for cottage building. Of this amount 370,038*l.* had been lent to members to buy or build as they deemed best; but the remaining 314,968*l.* had been expended in building cottages to sell or let to members. There is a great diversity of practice in dealing with the properties. Sixty-five societies gave details on this point, the results being as follows:—

Thirty-two societies	let but do not sell
Twenty-six „	let and sell
Seven „	sell but do not let

Five per cent. is the interest charged for advances, but the charge for expenses is usually very trifling. At Oldham they charge 2*s.* per year to each borrower while the repayments are being made. At Carlisle they charge one sum of 5*s.*

The advantages of the Industrial Societies Act in enabling metropolitan working men to hold their dwellings in common, in the same manner as they hold their retail societies in common, have lately caused an effort to be made to form a Co-operative Dwellings Association for London. It proposes to pay 4 per cent. interest on capital, and divide the surplus profits among the tenants, which shall be accumulated until they own as much share capital as is equivalent to the value of their dwellings.

V.—*Penny Banks.*

Co-operators have always tried to encourage their children to become connected with their societies. One method of doing this has been to establish small savings banks. The first was started in Oldham in 1859. A table published in the Wholesale Annual for 1885 showed that there were in 1884 154 societies which had joined these banks. The deposits for the year were 60,000*l.*; the withdrawals 15,000*l.*, and the total deposits 108,000*l.* There were 88,626 depositors. The following table gives the progress made in the growth of the number of these small savings banks:—

Number of Banks Started.	Date when Started.	Number of Banks Started.	Date when Started.
One	1859	Fifteen	1876
Two	'65	Thirteen	'77
One	'69	Seventeen	'78
Two	'70	Nine	'79
,,	'71	Sixteen	'80
Three	'72	Ten	'81
Eleven	'73	Seven	'82
Twelve	'74	Eleven	'83
Eleven	'75	,,	'84

Note.—Total, 154 societies.

VI.—*Educational Work.*

Great value is attached to educational work. In the earlier days this consisted of elementary teaching in evening classes (to make good deficiencies caused by the scarcity of elementary schools), and the opening of libraries and reading rooms free to members. Owing to elementary teaching being now general, the need for these evening classes has disappeared; and to some extent the opening of municipal free libraries and reading rooms have lessened the need for co-operators providing them. Of late years there has been a gradually growing conviction in the minds of co-operators that the best use to make of their educational funds is to disseminate as widely as possible among their members an accurate knowledge of economics. They believe that this is essential to a rapid and successful application of co-operation to manufacturing pursuits; and in spite of their many reverses in attempting co-operative production, their successes make them sanguine of ultimately being completely victorious.

In 1882 I obtained some returns from societies of the amount of educational work done by them. The totals are as follows:—

120	societies had	newsrooms.
100	,,	libraries.
34	,,	courses of lectures.
9	,,	endowed scholarships.
8	,,	science classes.
9	,,	discussion rooms.

The following table shows the steady increase in the amount granted out of profits for educational purposes.

Grants for Educational Purposes by Co-operative Societies, 1878-86.

Year.	Amount.	Year.	Amount.	Year.	Amount.
	£		£		£
1878	10,658	1881	14.474	1884	19,637
'79	12,234	'82	15,206	'85	21,750
'80	13,902	'83	17,949	'86	22,446

Societies usually provide accommodation, gas, fire, &c., for their educational departments out of the general expenses, so that the amounts of grants do not represent all the moneys expended in educational efforts.

A scholarship of 80*l.* a-year, to commemorate the services to co-operation of Mr. Thomas Hughes, has been founded at Oriel College, Oxford. Another is being founded to commemorate in a similar manner the services of Mr. E. V. Neale. Both these men belonged to the Christian Socialists of forty years ago.

The larger societies are gradually taking up, or helping with, the University Extension lectures; and efforts to meet the wants of smaller societies who are unable to pay fees are being made by securing the gratuitous services of capable lecturers. In this way courses of lectures are now being given gratuitously at Ipswich and Colchester by Mr. Stanley Leathes of Trinity College, Cambridge.

A number of classes have been formed this winter in different parts of the country for teaching co-operation; and a system of payment by results has been instituted, half being paid by the local society, and half by the central educational committee. If this effort meets with success, it is hoped that next winter will see a large development of the scheme.

For six or seven years past the English Wholesale Society have expended from 800*l.* to 1,000*l.* a-year in the production of an Annual. Its object is to supply solid matter for the benefit of leading co-operators. It contains elaborate statistics of the various co-operative organisations, and articles and statistics bearing on commerce and industry. The Scottish "wholesale" have joined in the production of the Annual last year and this year. About 6,000 copies are distributed gratuitously among the societies connected with the two "wholesales."

Co-operators have a weekly newspaper, called the "Co-opera- "tive News." It is the property of a co-operative society. The interest on capital is limited to 5 per cent. All profits above this are devoted to the improvement of the paper. The published price is 1*d.*, and it is circulated principally through the agency of the retail societies. These societies in many instances sell the paper for ½*d.*, to encourage the circulation, as they believe that readers of the "News" usually make the best members. The "News" was started in 1871; its circulation is now 34,000 weekly. Its predecessor was a small paper called the "Co-operator," which was started in 1860 by the Manchester Equitable Society. It then passed into the hands of Mr. Henry Pitman, who continued it until 1870, when he merged it into an anti-vaccination and vegetarian paper, which ceased to exist in 1871.

A large quantity of tracts, &c., for propagandist purposes are issued annually by the Co-operative Union. There are 109 distinct publications. In 1886 124,158 copies were sold, and 291,752 copies were given away. The total issue for the year was 415,910.

I think it advisable to note that from 1855 until 1862 the Registrar of Industrial Societies refused to certify the rules of those societies that provided for a portion of the profits being devoted to educational work, on the ground that it was contrary to the law. This effectually stopped the growth of educational effort; but some societies, led by the Rochdale Pioneers, who had always kept the educational question to the front, continued to spend a portion of their profits on educational work regardless of the registrar's ruling.

In the next two tables I give some statistics showing the general growth of the co-operative societies.

Industrial and Provident Societies Registered and Dissolved, 1862-85.

Year.	Number.		Year.	Number.	
	Registered.	Dissolved.		Registered.	Dissolved.
1862	454*	2	1874	113	54
'63	51	19	'75	98	18
'64	146	17	'76	72	25
'65	101	13	'77	58	16
'66	163	26	'78	48	43
'67	137	18	'79	40	62
'68	190	33	'80	53	32
'69	65	45	'81	51	55
'70	67	20	'82	65	30
'71	56	222†	'83	50	51
'72	103	180†	'84	75	38
'73	186	59	'85	84	33
	—	—	Total	2,526	1,111

Note.—Number of societies in 1885—1,415.

* Registered up to December 31st, 1862.

† Clearing the register of all known to have been dissolved.

Co-operative Societies in 1862, 1866, 1876, 1886. (*From the Wholesale Societies' Annual, but with the Supply Associations excluded.*)

Description.	1862.	1866.	1876.	1886.
Number of societies	454	701	1,203	1,399
„ members	90 341	144,072	503,422	833,127
	£	£	£	£
Share capital paid up	428,376	1,046,310	5,137,951	8.929,381
Loan capital	54,499	118,023	913,886	1,881,457
Reserve funds	—	—	—	413,529
Lands, buildings and fixtures	—	—	—	4,570,117
Written off land, &c., for depreciation	—	—	—	195,145
Investments in other societies	—	—	—	2,179,025
Value of stock-in-trade	—	—	—	3,387,354
Goods sold	2,333,523	4,462,676	18,926,154	29,606,908
Net profits	165,562	372,307	1,692,464	3,012,599
Grants to educational purposes	—	—	—	22,436
„ charitable „	—	—	—	10,063

VII.—*Organisation.*

A retail co-operative society is formed now-a-days with comparative ease, and with scientific precision. If a few men think they would like to start, they communicate with an official of the Co-operative Union, or auxiliary propagandist association. Every information is supplied gratuitously, together with co-operative tracts, and speakers at meetings. If the advice of these officials is followed, success is certain.

Model general rules are kept in stock, to which a few special rules giving the name of the society, &c., are added. The names of seven persons and the secretary are signed to two copies which are sent to the registrar for registration. The registrar knows the model rules, so the registration is quickly effected. The shares are 1*l.* each; and while usually every member is bound to take up one transferable share, the remainder are withdrawable. Every member has one vote; the committee is elected at the general meetings which are held quarterly; and they retire in rotation, two or three each quarter. The committee appoint and control all the employés of the society. They usually hold weekly meetings and appoint sub-committees to attend to detail work as the society grows. In very large societies the managers have much greater authority delegated to them than in the smaller ones. The method of conducting business is to sell at the current prices of the district. After paying all the expenses of management, the net profits are divided among the members in proportion to the amount of their purchases. To ascertain the amount of purchases made by each member, checks of paper or sheet metal marked with the amounts are given in exchange for the cash. These checks are brought in at the quarter's end, when they rank for dividend. Ready money transactions are the rule; credit is given to a limited amount in some societies. The secretary makes out the balance sheet, which is checked by two auditors elected usually from the members. Sometimes a co-operator known to be well up in accounts is elected, so as to insure accuracy. The committee are paid small fees, ranging from 4*d.* to 4*s.* a meeting. About 10*d.* to 1*s.* is the average in a fair-sized society. The secretary is paid by the quarter so long as he only gives part of his time, the amount being settled by the members. When he is employed the whole of his time, his appointment and remuneration is generally left to the committee. The auditors are remunerated by vote of the members.

When the society devotes a portion of its profits to educational work, it is usual to elect a special committee to carry on this department. They rarely get any remuneration for their services. They organise social meetings as well as the more serious work.

The "wholesale" societies are composed exclusively of other societies. No individuals are allowed to be shareholders. Every society shareholder has to take up shares in proportion to the number of its members. But the payment of a few shillings towards their share capital is all that is needed to give them all the privileges of membership. The shareholders have voting power according to their size in the English "wholesale;" but according to their purchases in the Scottish "wholesale." General meetings are held quarterly. The Scottish "wholesale" have one committee only, but the English "wholesale" have three committees, one which is called the general, and which has supreme power, and two branch committees, one at London, the other at Newcastle.

The retail societies purchase their goods from the "wholesale." They are not compelled to do so, but the "wholesales" are bound to supply them if required, and naturally they try to secure all the trade of the societies in the articles they deal in. After payment of expenses the net profits are divided among the purchasing societies in proportion to the amount of their purchases. By this process all the profits of the middlemen are accumulated for the benefit of, and are paid to, the individual consumer.

The two "wholesales" hold joint meetings of the four committees to discuss matters of general importance, such as the wellbeing of the Irish and foreign branches. They also join in appointing a sub-committee to supervise the tea and coffee department in London, although the legal ownership of the department is vested solely in the English "wholesale."

The productive societies require to be put into three groups.

The largest group is that composed of societies formed by and in the interests of the consumers. All the corn mills are in this category. These are worked on similar lines to the retail societies. The second group is composed of societies that have been formed by the consumers and workers combined. The only difference in the working of these is that the shares are all transferable, and the profits are usually divided between the capitalists, the workers, and the consumers; while in the retail, wholesale, and corn milling societies the profits go almost entirely to the consumers, the interest on capital being fixed, and the workers only occasionally having any share in the profits. The last group is where the societies are formed in the interests of the workers only, and they usually take all the profits, after paying a fixed interest on capital. The support of all the distributive societies is usually sought by the productive societies, whatever basis they may be founded upon.

For propagandist and educational purposes co-operative societies have a special organisation. It is called the "Co-opera-"tive Union," and is composed of all societies wishing to join it. The subscription is a maximum sum of 2*d.* per member per year. 725 societies, numbering 699,288 members, are subscribers to this union. Its income in 1886-87 was 4,200*l.* It was formed in 1869. Prior to that there were several smaller organisations, the chief being one composed of the societies in Lancashire and Yorkshire.

The "Co-operative Union" is divided into six sections, viz.: The Scottish, Northern, North-Western, Midland, Southern, and Western. Each section has a board of directors elected by the societies in the section in any manner they may choose. There are three different methods of election in operation. The sectional boards look after the wellbeing of the societies in their boundaries; help the formation of societies, and generally stimulate and guide co-operative progress. Most of the sections are sub-divided into districts with secretaries and committees for each. Frequent conferences are held for the discussion of matters connected with co-operation, which are attended by delegates from the societies in the district. Numerous public and social meetings are also held at which addresses are delivered by the officers of the union. All the work is honorary; expenses out of pocket only being paid, except the staff at Manchester, consisting of the secretary, assistant secretary, and several clerks.

The sectional boards hold two joint meetings annually, when they form what is called the central co-operative board. In this capacity they are the supreme controlling body of the union. What is termed a united board is formed by each section appointing representatives. This board meets quarterly at

Manchester, and exercises the authority of the central co-operative board, including the making of grants of money to the sections to enable them to carry on their work. This united board organises committees composed of members of the different sectional boards, which look specially after certain classes of work. At present there are four of these committees: (*a.*) The practical propaganda; (*b.*) The productive; (*c.*) The educational; and (*d.*) The foreign. In addition the north-western sectional board is constituted an office committee to supervise and control the staff at Manchester, between the united board meetings; and the southern sectional board is constituted into a parliamentary committee to watch over co-operative interests in Parliament.

The Annual Co-operative Congress is held in Whitsun week. It visits the sections in turn, but the north-western, on account of its importance, takes two turns to the others' one. At this congress the progress of the movement is noted, and suggestions for further progress are considered and determined. During 1886, 185 conferences of delegates from societies were held. The number of public and social meetings is not known, but it will be counted by thousands.

VIII.—*Aims.*

The present co-operative movement is usually dated from the birth of the Rochdale Pioneers' Society in 1844. At that time there were a considerable number of societies in existence, and at present there are 37 societies living which are older than Rochdale. The oldest is at Govan, near Glasgow, and it dates from 1777. The next oldest is the "Hull Anti-Corn Mill," which was started in 1795. The following paragraph is taken from a brief account of this Milling Society in the "Wholesale Annual" for 1883: "After the society commenced business it was found to be "doing so well, and taking so much trade from private millers, "that in 1810 the millers of the town decided to put the society "down. But seventy years ago they did not proceed in the way that "modern opponents do, by merely writing letters to the press, and "misrepresenting the society, or petitioning the Board of Trade to "stop public servants becoming directors of it. Such a process "was too slow for the millers of 1810. It was therefore 'indicted "'as a nuisance,' which it certainly was to them, and which they "undertook to prove at York on the 1st of August, 1811. At the "close of the trial, however, it was found that a Yorkshire jury "considered poverty a greater 'nuisance,' and deeming the society "to be an institution likely to reduce poverty, they gave a verdict "in its favour."

These older societies were mainly the offspring of the Owenite agitation, and were almost all in a decaying and unsatisfactory condition. There was no security to the members, as any one member could appropriate the whole of the joint property with impunity in the then state of the law.

The Friendly Societies Act, the 9 and 10 Victoriæ, cap. 17, gave the first small instalment of protection, by enabling societies to be legally formed under what was called the "frugal investment "clause." It ran as follows: "for the frugal investment of the "savings of the members, for the better enabling them to "purchase food, firing, clothes, or other necessaries, or the tools or "implements of their trade or calling, or to provide for the "education of their children or kindred, with or without the "assistance of charitable donations. *Provided* always that the "shares in any such investment society shall not be transferable, "and that the investment of each member shall accumulate and be "applied for the sole benefit of the member investing, or the "husband, wife, children, or kindred of such member; and that "no part thereof shall be appropriated to the relief, maintenance, "or endowment of any other person or persons whomsoever, and "that the full amount of the balance due according to the rules of "such society to such member shall be paid to him or her on "withdrawing from the society; and that no such last-mentioned "society shall be entitled or allowed to invest any part of its funds "with the commissioners for the reduction of the national debt."

But the protection was very precarious. The Leeds Society, which was one of the earliest of the new series as I may call them, found itself in a great difficulty. The law did not allow them to sell to non-members. They had an accumulation of offal at their corn mill, and as their members did not require it they were compelled to break the law and risk the consequences, or stop their business.

In 1852, through the generous help of the Christian socialists, and of John Stuart Mill, the first Industrial Societies Act was passed; after several alterations, important improvements were made by the Industrial Societies Act of 1862, which made registered societies into bodies corporate, with perpetual succession and a common seal, and with limited liability of their members. The Act of 1871 gave societies the power of dealing in land, &c., and thus almost completed the circle of objects for which societies may be formed.

Rochdale deserves to be looked upon as the pioneer of the co-operative movement. They worked unceasingly and ungrudgingly to help working men to follow their examples, and for many years they were always to the front in new efforts at co-operation. The aims of the co-operators may therefore be very well expressed by a quotation from the declared objects of their society: "As "soon as practicable, this society shall proceed to arrange the "powers of production, distribution, education, and government." These really are our aims. Like nearly all other people, co-operators have kept saying that the mechanism of society is in bad order; and, unlike many others, they have set to work to repair it.

They do not believe in grand schemes of wholesale demolition, with a view to equally grand methods of reconstruction. They think that success lies in patient and steady, if slow, efforts at amendment and reform.

They agree that some people get too great a proportion of this world's goods, while millions get too little; and they hope by means of co-operation to remove most of the inequities, although they never expect to remove all the inequalities. Briefly, they believe that by becoming possessors of capital and combining together in using it, they can reduce the interest or remuneration to be paid to capitalists to a very small figure, much below what they have hitherto received. Similarly, they hope that by training numbers of their children in a manner that will fit them for superior positions in commerce and industry, that the present excessive remuneration for what economists term "management," can be very much reduced. As consumers consist of only three classes: viz., capitalists, employers, and employed (each of course having their dependents), it follows that if the portions hitherto taken by the capitalists and by the employers are materially reduced, the portion left over for the employed class will be materially increased. Our methods and machinery are improved education to our people, especially economic; associations for the purpose of utilising capital; appropriating the superior positions, now rarely open to a working man; and equity in the conduct of these associations. If these are attended to, it does not very much matter whether the future action of working people is on the lines of the Oldham men, who have invested many millions in joint stock companies, and so improved their plant and manner of working that they have monopolised a large branch of the cotton trade, or whether the purer form of co-operative production, which embraces profit sharing among the workers, shall be developed and extended until it covers most of the industries of the country.

I believe that co-operation is certain to continue to grow. It brings out the best characteristics of men. It has all the advantages of State socialism, with none of its disadvantages. It can grow much faster if it is aided and encouraged by those classes who at present enjoy the lion's share of the good things of this life. It seems perhaps absurd to ask any of these to help to lessen their share, but many already admit that it ought to be lessened, their only difficulty is how to lessen it without doing more harm than good. Helping and stimulating the growth of co-operative associations is, I think, the one way in which they can do it with permanent success; and in doing it, I think they will materially aid in promoting the happiness and prosperity of all classes.

APPENDIX.

TABLE I.—*Showing the Progress of those Co-operative Retail*

Programme Number.	Name of Society.	Date Started.	1867.			
			Number of Members.	Share Capital.	Sales.	Profits.
				£	£	£
1	Leeds	1847	3,954	20,675	111,457	4,199
2	Newcastle-on-Tyne	'59	967	2,392	20,003	1,531
3	Bolton	'59	2,233	19,812	45,403	3,755
4	Oldham, Industrial	'50	2,645	36,698	103,029	9,581
5	Barnsley, British	'62	889	3,660	27,965	917
6	Gateshead	'61	896	3,243	21,160	1,580
7	Rochdale, Pioneers	'44	6,823	116,090	283,942	35,048
8	Bury (Lancashire)	'56	5,114	53,459	165,005	20,668
9	Manchester, Equitable	'59	3,198	22,512	70,723	4,417
10	Oldham, Equitable	'50	1,623	30,922	90,622	9,889
11	Halifax, Industrial	'50	5,827	71,200	180,441	12,106
12	Huddersfield	'60	946	5,161	35,142	1,361
13	Accrington	'60	1,645	12,813	50,888	4,466
14	Bishop Auckland	'60	651	2,494	10,224	544
15	Brighouse	'56	778	7,525	25,445	2,020
16	Blaydon	'58	1,073	7,270	40,508	3,661
17	Crook	'64	266	372	9,865	543
18	Chester-le-Street	'63	480	2,144	16,167	1,565
19	Bradford, Provident	'60	1,412	6,317	32,216	1,527
20	Dewsbury	'57	490	5,134	29,727	851
21	Leicester	'60	454	—	8,338	386
22	Heckmondwike	'60	1,130	12,590	41,528	3,031
23	Pendleton	'60	166	557	4,452	217
24	Plymouth	'59	272	567	2,821	147
25	Crewe, Friendly	'45	745	5,236	38,370	4,139
26	Burnley	'61	58	447	1,671	60
27	Eccles	'57	1,011	7,624	28,537	2,179
28	Gloucester	'60	843	2,835	14,693	1,096
29	Cleator Moor	'58	600	2,476	22,623	2,205
30	Derby	'50	1,186	4,581	21,769	1,479
31	Haswell	'66	97	294	3,553	140
32	Leigh	'58	2,151	30,749	52,879	3,022
33	Keighley	'60	—	—	—	—
34	Failsworth	'59	514	5,579	20,874	1,494
35	Dunfermline	'61	—	—	—	—
36	Stratford	'61	281	802	7,235	377
37	Batley	'67	—	—	—	—
38	Lincoln	'61	488	1,544	8,107	494
39	Todmorden	'46	643	5,253	24,048	2,677
40	Radcliffe	'60	913	7,442	23,036	2,156

APPENDIX.

Societies whose Sales, in 1886, *exceeded* 100,000*l.* (*see p.* 34).

1876.				1886.			
Number of Members.	Share Capital.	Sales.	Profits.	Number of Members.	Share Capital.	Sales.	Profits.
	£	£	£		£	£	£
17,461	135,054	331,826	34,616	23,985	251,235	480,204	52 833
3,567	18,022	116,841	11,358	8,708	89,006	338,030	50,879
5,014	77,719	109,847	14,630	12,557	178,675	335,877	48,284
6.513	71,547	284,977	39,859	9,684	94,798	312,230	46,121
5,226	40,789	151,370	15,368	10,680	118,800	283,903	32,202
2,530	14,226	103,913	9,825	7,827	52,996	269,585	40,115
8,892	254,000	305,190	50,668	10,984	321,678	246,031	31,075
8,254	98,381	231,692	30,655	10,152	127,321	240,239	46,587
5,979	45,766	123,155	9,893	11,948	149,944	229,886	21,058
3.380	84,132	154,235	23,027	8,191	75,876	228,946	36,543
7,600	204,440	237,754	19,829	8,057	126,384	224,870	24,981
3,162	39,085	91,135	11,267	8,162	117,091	209,426	28,879
4,274	72,623	176,841	19,559	6,309	132,742	209,291	29,548
3,217	21,750	93,129	9,086	6,808	47,051	200,931	34,507
3.439	65,952	132,345	16,039	4,784	64,542	188,355	33,154
2,696	40,716	129,997	15,035	4,356	75,192	165,770	31,330
2,037	16,484	86,385	9,467	3,744	43,123	150,369	23,233
2,457	20,053	82,399	11,192	3,456	45,952	148,521	29,496
3,780	38,704	90,050	6,713	7,290	83,536	146,567	17,256
2,834	45,832	126,200	14,374	5,526	103,286	145,519	18,388
6,417	27,962	165,842	15,346	8,008	81,353	143,362	18,947
4,554	80,781	149,320	18,339	5,767	93,871	135,592	16,974
1,886	5,840	37,003	5,715	6,057	40,075	134,255	21,352
1,750	8,666	35,647	3,465	8,864	49,146	130,559	18,193
1,526	13,869	81,958	8,699	3,138	56,073	130,530	18,317
164	1,169	5,045	435	4,818	40,747	125,215	18,260
3,617	36,578	128,769	14,177	4,441	47,108	120,839	16,464
1,937	18,547	51,995	3,987	5,186	62,849	110,867	14,159
2,417	25,525	96,585	13,240	3,592	50,471	109,734	15,219
2,630	29,014	76,216	7,396	5,179	82,858	109,127	11,186
1,517	10,844	49,219	6,958	3,154	16,759	109,021	16,060
3,314	75,213	138,118	8,924	3,498	49,282	107,695	4,735
1,352	14,748	54,022	3,657	3,784	45,116	106,626	13,986
2,158	27,946	61,445	6,981	3,848	56,347	104,499	12,150
1,629	12,370	47,855	9,013	3,331	32,463	104,338	14,918
1,147	8,018	31,001	3,242	3,803	40,060	103,370	14,627
1,837	20,976	69,245	8,450	3,211	60,094	102,795	14,778
1,726	9,793	34,456	1,967	4,448	45,770	102,090	11,081
2,077	42,515	73,836	11,207	3,007	77,036	101,672	16,930
2,350	31,766	83,330	10,733	3,474	43,172	101,161	15,594

TABLE II.—*Showing the Number of Co-operative Retail Societies that have Branch Stores, and the Numbers possessed by them* (*see p.* 36).

	Total.
125 societies have one branch each	= 125
59 „ two branches each	= 118
49 „ three „	= 147
31 „ four „	= 124
21 „ five „	= 105
20 „ six „	= 120
11 „ seven „	= 77
6 „ eight „	= 48
9 „ nine „	= 81
4 „ ten „	= 40
2 „ eleven „	= 22
2 „ twelve „	= 24
1 society has thirteen branches	= 13
6 societies have fourteen branches each	= 84
2 societies have fifteen branches each	= 30
1 society has sixteen branches	= 16
1 „ seventeen „	= 17
2 societies have eighteen branches each	= 36
1 society has nineteen branches........	= 19
1 „ twenty branches	= 20
1 „ twenty-two „	= 22
2 societies have twenty-seven branches each	= 54
1 society has twenty-eight branches	= 28
1 „ thirty-eight „	= 38
1 „ fifty-six „	= 56
360 societies have branches..........................	1,464

TABLE III.—*Showing the Co-operative Retail Societies that have taken up Land for Agricultural Purposes* (*see p.* 37).

Name of Society.	Acreage.	Capital Employed.	Rent.	Result of Working, 1886. Profit (+). Loss (—).
		£	£	
Aspatria, Cumberland	50	400	100	Recently taken.
Barnsley, Yorkshire	133	2,260	230	„
Bedlington, Northumberland ...	84	500	149	„
Bingley, Yorkshire	23	—	87	Accommodation land for butchers, &c.
Chipping Norton, Oxon.	113	Have purchased freehold		—9*l*.
Cleator Moor, Cumberland	55	711	148	+92*l*.
Derwent Flour, Durham	145	1,000	190	Recently taken.
Gloucester	8 100	—	Free-hold 275	„
Halifax, Yorkshire	48	450	175	—76*l*.
Harwich, Essex...........................	40	600	94	Recently taken.
Ipswich, Suffolk	50	—	100	„
Kettering, Northamptonshire ...	4½	—	Free-hold	Accommodation land for butchers, &c.
Manchester..................................	382	—	—	Recently taken.
Middleton, Lancashire	16	200	75	Accommodation land for butchers, &c.
Mirfield, Yorkshire	15	70	45	„
Newbottle, Durham	50	131	—	+78*l*.
North Seaton, Northumberland .	30	260	67	+50*l*.
Ripley, Derby	50	640	100	+83*l*.
Sheerness Economical, Kent....	41 15	Freehold Rented	—	Recently taken.
West Stanley, Durham...............	180	1,000	88	„
Woolwich	52	Freehold	—	„

TABLE IV.—*Showing the Principal Events in connection with the Co-operative Wholesale Society, Limited, since its Commencement* (*see p.* 38).

Year.	Day.	Events.
1863	Aug. 11	Co-operative Wholesale Society enrolled.
'64	March 14	„ commenced business.
'66	April 24	Tipperary Branch opened.
'68	June 1	Kilmallock Branch opened.
'69	March 1	Balloon Street Warehouse opened.
„	July 12	Limerick Branch opened.
1871	Nov. 26	Newcastle-on-Tyne Branch opened.
'72	July 1	Manchester Boot and Shoe Department commenced.
„	Oct. 14	Bank Department commenced.
1873	Jan. 13	Crumpsall Works purchased.
„	April 14	Armagh Branch opened.
„	June 2	Manchester Drapery Department established.
„	July 14	Waterford Branch opened.
„	Aug. 4	Cheshire Branch opened.
„	„ 4	Leicester Works purchased.
„	„ 16	Insurance Fund established.
„	Sept. 15	Leicester Works commenced.
1874	Feb. 2	Tralee Branch opened.
„	March 9	London Branch established.
„	Oct. 5	Durham Soap Works commenced.
1875	April 2	Liverpool Purchasing Department commenced.
„	June 15	Manchester Drapery Warehouse (Dantzic St.) opened.
1876	Feb. 14	Newcastle Branch Buildings, Waterloo Street, opened.
„	„ 21	New York Branch established.
„	May 24	S.S. "Plover," purchased.
„	July 16	Manchester Furnishing Department commenced.
„	Aug. 5	Leicester Works first Extensions opened.
1877	Jan. 15	Cork Branch established.
'79	Feb. 21	S.S. "Pioneer," Launch of.
„	Mar. 24	Rouen Branch opened.
„	„ 29	S.S. "Pioneer," Trial trip.
„	June 30	Goole Forwarding Department opened.
1880	Jan. 30	S.S. "Plover" sold.
„	Aug. 14	Heckmondwike Boot and Shoe Works commenced.
„	Sept. 27	London Drapery Department commenced in new premises, Hooper Square.
1881	June 6	Copenhagen Branch opened.
„	July 27	S.S. "Cambrian" purchased.
1882	Oct. 31	Leeds Sale Room opened.
„	Nov. 1	London Tea and Coffee Department commenced.
1883	July 21	S.S. "Marianne Briggs" purchased.
'84	April 7	Hamburg Branch commenced.
„	May 31	Leicester Works second Extensions opened.
„	June 25	Newcastle Branch—New Drapery Warehouse opened.
„	Sept. 13	Commemoration of the Society's Twenty-first Anniversary at Newcastle-on-Tyne and London.
„	„ 20	Commemoration of the Society's Twenty-first Anniversary at Manchester.
„	„ 29	Bristol Depôt commenced.
„	Oct. 6	Launch of the S.S. "Progress."
1885	Dec. 30	Fire—London Tea Department.
'86	April 22	Nottingham Sale Room opened.
„	Aug. 25	Longton Crockery Depôt opened.
„	Oct. 12	Launch of S.S. "Federation."
1887	March 14	Batley Woollen Cloth Mill started.
„	June 1	S.S. "Progress" damaged by fire at Hamburg.
„	July 21	Manchester New Furnishing Warehouse opened.
„	Nov. 2	London Branch—New Warehouse opened.
„	„ 2	Manufacture of Cocoa commenced in London.

TABLE V.—*Showing the Progress of the Co-operative Wholesale Societ*

Year Ending	5*l.* Shares Taken up.	Number of Members belonging to our Shareholders.	Capital.					
			Shares.	Loans and Deposits.	Trade and Bank Reserve Fund.	Insurance Fund.	Reserved Expenses.	Total.
			£	£	£	£	£	£
Oct. 1864 (30 weeks)	—	18,337	2,455	Included in Shares.	—	—	—	2,455
,, '65........................	—	24,005	7,182		—	—	—	7,182
,, '66........................	—	31,030	10,968		82	—	—	11,050
Jan. '68 (65 weeks)	—	59,349	11,276	14,355	682	—	—	26,313
,, '69........................	—	74,737	14,888	16,059	1,115	—	—	32,062
,, '70........................	—	79,245	16,556	22,822	1,280	—	—	40,658
,, '71 (53 weeks)	—	89,880	19,015	22,323	2,826	—	—	44,164
,, '72........................	5,835	114,588	24,410	25,768	1,910	—	—	52,088
,, '73........................	6,949	134,276	31,352	112,589	2,916	—	—	146,857
,, '74........................	13,899	168,985	48,126	147,949	1,613	2,356	—	200,044
,, '75........................	17,326	198,608	60,930	193,594	5,373	3,385	—	263,282
,, '76........................	22,254	249,516	78,249	286,614	8,910	5,834	—	379,607
,, '77 (53 weeks)	24,717	276,522	94,590	299,287	12,631	10,843	634	417,985
,, '78........................	24,979	274,649	103,091	287,536	14,554	12,556	788	418,525
,, '79........................	28,206	305,161	117,657	291,939	16,245	15,127	1,146	442,114
Dec. '79 (50 weeks)	30,688	331,625	130,615	324,670	25,240	15,710	1,095	494,330
,, '80........................	33,663	361,523	146,061	361,805	38,422	17,905	1,661	565,854
,, '81........................	34,351	367,973	156,052	386,824	16,037	18,644	2,489	580,046
,, '82........................	38,643	404,006	171,940	416,832	20,757	19,729	2,945	632,203
,, '83........................	41,783	433,151	186,692	455,879	20,447	21,949	6,214	691,181
,, '84 (53 weeks)	45,099	459,734	207,080	494,840	25,126	24,324	9,988	761,358
,, '85........................	51,099	507,772	234,112	524,781	31,094	40,084	11,104	841,175
,, '86........................	58,612	558,104	270,679	567,527	37,755	57,015	11,403	944,379

Limited, from its commencement in March, 1864, *to December,* 1886 (*see p.* 38).

Net Sales.	Comparison with Corresponding Period Previous Year.		Distributive Expenses.		Net Profit.	Average Dividend Paid per £.	Transferred to Reserve Fund.
	Increase.	Rate.	Amount.	Rate per £ on Sales.			
£	£	Per cnt.	£		£	d.	£
51,857	—	—	347	1¾	267	1½	—
120,754	—	—	906	1¾	1,858	3⅛	—
175,489	54,735	45¼	1,615	2⅛	2,310	3	234
331,744	112,688	51⅜	3,135	2¼	4,411	3	450
412,240	124,063	43	3,338	1⅞	4,862	2¾	416
507,217	94,977	23	4,644	2⅛	4,248	1¾	542
677,734	159,379	30¾	5,583	1⅞	7,626	2¼	1,620
758,764	86,559	12⅞	6,853	2⅛	7,867	2¼	1,036
1,153,132	394,368	51⅞	12,811	2⅜	11,116	2¼	1,243
1,636,950	483,818	41⅞	21,147	3	14,233	2	922
1,964,829	327,879	20	28,436	3⅜	20,684	2	4,461
2,247,395	282,566	14⅜	31,555	3⅜	26,750	2⅜	4,826
2,697,366	401,095	17½	42,436	3¾	36,979	2⅜	4,925
2,827,052	188,897	7⅛	43,169	3⅛	29,189	2	579
2,705,625	121,427*	4⅜*	43,093	3¾	34,959	2⅛	5,970
2,645,331	22,774	⅞	41,309	3¾	42,764	2¾	8,060
3,339,681	611,282	22⅝	47,153	3⅜	42,090	2⅜	10,651
3,574,095	234,414	7	51,306	3⅝	46,850	2⅝	7,672
4,038,238	464,143	12⅞	57,340	3⅝	49,658	2⅝	3,416
4,546,889	508,651	12½	66,057	3⅝	47,885	2⅝	3,176
4,675,371	41,042	⅞	70,343	3½	54,491	2½	6,432
4,793,151	203,946	4⅝	74,305	3⅛	77,630	3⅝	4,434
5,223,179	430,028	8⅞	81,653	3¾	83,328	3⅛	7,077

* Decrease.

TABLE VI.—*Showing the Position of Sixty*

Object of Manufacture.	Name of Society.	Date Registered.	Number of Members at end of 1886.	Liabilities.		
				Share Capital at end of 1886.	Loan Capital at end of 1886.	Reserve Fund at end of 1886.
				£	£	£
Corn Milling	Derwent (Shotley Bridge)	1872	8	8,220	10,975	243
,,	Easingwold	'55	—	1,132	—	—
,,	Great Grimsby	'72	410	1,741	2,050	—
,,	Halifax	'47	2,236	95,346	27,532	885
,,	Hull Anti Mill	1795	4,835	9,670	3,225	—
,,	Hull Subscription	1801	2,267	3,567	—	—
,,	Midland Federal	'75	17	11,408	2,487	—
,,	Northallerton	'57	814	1,615	—	—
,,	Oldham Star	'68	243	48,354	14,006	—
,,	Rochdale	'50	751	95,259	59	—
,, and baking	Sheerness Economical	'16	878	9,362	50	430
,,	Sowerby Bridge	'54	4,056	104,554	—	5,650
Farming	Assington	'83	281	2,307	609	—
,,	North Seaton	'72	105	261	—	141
,,	Radbourne	'84	12	—	4,704	—
,,	Ufton Hill	'85	—	—	3,845	—
Cotton cloth	Burnley Self-Help Manufacturing	'86	231	2,900	2,300	—
,,	Rochdale Manufacturing	'54	972	65,855	66,996	2,034
,,	Sabden Manufacturing	—	539	8,225	234	—
Elastic web	Leicester Elastic Web Manufacturing	1878	8	1,115	300	227
Flannel	Lancashire and Yorkshire Productive	'73	22	2,640	12,964	—
Fustian	Hebden Bridge Fustian Manufacturing	'70	501	18,226	5,436	1,244
Hosiery	Hinckley Manufacturing	—	90	150	70	—
,,	Leicester	1876	143	2,830	2,031	238
,,	Sheepshed	—	49	72	126	—
Linen	Dunfermline Manufacturing	1872	100	825	216	180
Quilts and table covers	Eccles Manufacturing	'61	299	10,929	4,461	428
Silk twist	Leek Silk Twist	'74	41	545	457	100
Worsted	Airedale Manufacturing, Bradford	'71	205	2,465	622	411
,,	Thomson, William and Sons, Limited	'86	81	3,000	9,838	—
Woollen and cotton	Paisley Manufacturing	'62	325	4,417	6,237	264
Bleaching and dyeing	Strathaven	'62	40	460	—	—
Tailoring	Working Tailors (London)	'84	85	42	52	9
Boots and shoes	Bozeat Manufacturing	—	73	392	277	—
,,	Earls Barton	1880	40	—	—	—
,,	Finedon Manufacturing	'86	22	136	189	5
,,	Leicester Manufacturing	'86	107	46	—	—
,,	Norwich Leather and Grindery	'86	104	42	32	2
,,	Northamptonshire Productive, Wollaston	'81	43	839	434	100
,,	Portland Town Profit-sharing	'85	24	298	93	—
Galvanised ware	Dudley Productive	'85	22	225	160	6
Nails	Dudley Nail Manufacturing	'86	12	188	66	54
,,	Midland Nail Makers' Association	—	8	341	165	33
Watches	Coventry Watch Manufacturing	1876	101	1,366	350	276
Cutlery	Sheffield Cutlery	'73	65	173	140	36
,,	,, Haft and Scale Cutting and Dealing	'76	25	797	816	—
Locks, &c.	Walsall Lock and Hardware Manufacturing	'73	27	507	235	354
Machines	Keighley Ironworks	'85	160	890	—	—
Horse shoeing	Rochdale	'79	10	118	310	—
,,	Tozer (London)	'84	36	446	—	—
Bobbins	Staveley	'80	122	1,777	857	—
Building	Bromley Builders	'85	25	39	2,039	—
Quarrying and building	Howley Park, Yorkshire	'72	143	5,000	—	858
Baking powder and sundries	Gorton Sundries	'85	17	81	—	1
Fishing	North Shields Fishing	'84	41	1,017	512	—
Bookbinders	Bookbinders (London)	'85	96	406	—	—
Portmanteaus and trunks	Portmanteau and Trunk Makers (London)	'84	165	316	61	—
Bag Manufacturing	Bag Manufacturing (London)	'85	8	8	375	—
Printing	Co-operative (Manchester, London and Newcastle)	'69	476	15,545	13,162	2,582
,,	Edinburgh Printing Company	—	135	4,329	8,132	567
Number of societies making returns... 60	Totals		22,701	552,814	210,287	17,358

* Loss 4*l.* † Loss 258*l.*

Co-operative Productive Societies in 1886 (*see p.* 40).

Assets.				Trade.	Net Profit.		Division of Profit.				
							Total Paid to				
Value of Saleable Stock at end of 1886.	Value of Land, Buildings, and Fixed Stock at end of 1886.	Allowed for Depreciation during 1886.	Investments at end of 1886.	Goods Sold during 1886.	Total during 1886.	Per Cent. on Sales.	Share Capital.	Labour.	Purchaser.	Per Cent. on Capital.	Per £ on Labour.
£	£	£	£	£	£		£	£	£		*s. d.*
6,507	10 000	827	—	77,472	1,809	2·33	924	—	885	—	—
530	—	—	—	7,242	*	—	—	—	—	—	—
455	2 800	—	—	4,906	—	—	—	—	—	—	—
33,076	67,085	2,000	160	192,217	12,986	6·75	4,781	—	8,050	5	—
877	12,455	240	—	31,177	675	2·16	241	—	400	2½	—
244	—	—	—	6,405	147	—	—	—	—	—	—
11,425	15,301	1,019	—	71,949	590	0·76	—	—	—	—	—
243	2,000	—	—	7,178	362	5·04	—	—	—	—	—
30,381	23,999	1,852	437	153,913	—	—	—	—	—	—	—
64,[illegible]93	29,549	1,918	—	166,873	372	0·19	—	—	—	—	—
2,147	7,610	202	77	22,857	2,212	9·67	411	27	1 655	5	– 3
32,681	39,480	2,492	15,000	333,655	24,111	7·22	5,290	—	18,821	5	—
1,734	378	10	3	1,642	†	—	—	—	—	—	—
228	17	14	—	568	52	9·12	26	—	—	10	—
4,033	727	—	—	1,896	—	—	—	—	—	—	—
3,846	—	—	—	674	—	—	—	—	—	—	—
—	3,800	—	—	7,500	400	5·33	—	—	—	—	—
29,702	95,563	4,347	—	190,101	6,632	3·48	6,500	—	—	10	—
8,055	17,323	644	—	40,386	—	—	—	—	—	—	—
1,832	516	—	27	10,459	115	1·09	55	—	—	5	—
12,178	4,341	456	87	25,299	178	0·70	—	—	—	—	—
5,707	18,515	494	123	25,787	2,757	10·68	1,314	250	657	5 and 7½	– 9
300	—	—	—	180	—	—	—	—	—	—	—
3,589	1,261	123	2,094	9,097	300	3·29	185	—	—	7½	—
96	—	—	—	126	—	—	—	—	—	—	—
968	210	10	98	1,096	57	5·20	39	9	4	5	—
4,970	9,917	416	71	12,242	304	2·48	529	—	—	5	—
358	99	20	—	3,863	161	4·16	83	34	—	10	1 –
2,807	365	39	99	8,711	690	7·92	353	30	268	14½	– 8½
—	—	—	—	—	—	—	—	—	—	—	—
9,010	2,313	81	—	35,738	1,919	7·45	420	259	1,240	9½	– 11½
400	—	—	—	—	30	—	—	—	—	—	—
—	38	9	—	710	—	—	—	—	—	—	—
666	123	6	—	3,032	—	—	—	—	—	—	—
212	—	—	—	363	4	—	—	—	—	—	—
546	34	5	—	91	30	3·30	5	25	—	5	3 6
—	4	—	—	—	—	—	—	—	—	—	—
85	8	—	—	439	44	10·02	1	3	36	5	—
2,763	376	83	—	12,739	140	1·09	63	100	—	5	– 6½
107	21	—	—	468	—	—	—	—	—	—	—
251	171	14	—	2,159	55	2·54	21	—	—	5	—
425	7	—	4	814	51	6·26	9	38	—	5	—
186	7	2	—	1,172	85	7·25	28	49	—	10	—
1,737	23	3	—	3,317	306	9·22	97	77	77	7½	1 –
247	16	2	2	611	58	9·65	12	—	22	7½	—
1,173	—	—	—	2,836	—	—	—	—	—	—	—
1,629	732	66	—	12,430	469	3·77	37	228	—	7½	1 –
100	—	—	—	8	—	—	—	—	—	—	—
168	—	—	5	605	78	—	—	—	—	—	—
—	—	—	—	1,344	—	—	—	—	—	—	—
—	—	—	—	4,289	‡	—	—	—	—	—	—
—	1,875	46	50	711	21	2·95	—	—	—	—	—
1,151	2,946	208	—	8,192	252	3·07	250	—	—	10	—
96	28	—	—	635	23	3·78	8	8	7	10	2
—	1,510	58	—	1,639	104	6·34	—	—	—	—	—
125	—	—	—	—	—	—	—	—	—	—	—
242	16	—	1	894	—	—	—	—	—	—	—
255	—	—	—	347	—	—	—	—	—	—	—
5,341	22,227	3,064	357	42,684	2,852	6·68	1,516	369	385	10	– 7
—	10,902	375	49	7,237	669	9·24	549	120	—	14½	1 –
290,487	406,688	21,145	18,744	1,551,203	62,100§	—	23,747	1,626	32,507	—	—

‡ Loss 612*l*.

§ Loss 874*l*.

TABLE VII.—*Showing the Principal Events in connection with the Scottish Co-operative Society, Limited, since its commencement* (*see p.* 38).

Date.	Events.
1869.	The Scottish Wholesale Society started.
'73.	Drapery department started.
'77.	Leith branch opened.
'78.	Kilmarnock branch opened.
'79.	Insurance fund commenced.
'81.	Dundee branch opened.
'84.	Furniture department started.
'85.	Boot and shoe factory started.
,,	Enniskillen branch opened.
'87.	Printing department started.

TABLE VIII.—*Showing the Progress of the Scottish Co-operative Wholesale Society, Limited, from its commencement in September*, 1868, *to December* 1886 (*see p.* 38).

Year.	Number of Weeks.	Yearly Totals.				Expenses.	Net Profits.
		Number of Stores.	Number of Members.	Total Capital. Share, Loan, Reserve, and Insurance.	Sales for Each Year.		
				£	£	£	£
1868	13	28	5,590	1,795	9,697	163	48
'69	52	51	8,560	5,658	81,094	1,035	1,304
'70	50	67	11,820	12,542	105,249	1,549	2,419
'71	52	85	15,000	18,009	162,658	2,181	4,131
'72	52	107	18,708	30,931	262,531	3,470	5,435
'73	52	124	21,271	50,433	384,489	5,055	7,446
'74	52	129	24,651	48,981	409,948	6,696	7,553
'75	52	132	27,112	56,750	430,169	7,137	8,233
'76	51	131	29,008	67,218	457,529	7,540	8,836
'77	52	133	31,945	72,568	589,222	8,648	10,925
'78	52	138	34,830	83,173	600,590	10,095	11,969
'79	52	137	36,008	93,076	630,098	11,117	14,989
'80	52	161	41,584	110,179	845,221	14,027	21,685
'81	54	178	49,073	135,713	986,647	15,757	23,981
'82	52	189	53,684	169,428	1,100,589	19,685	23,220
'83	52	202	59,529	195,396	1,253,154	22,119	28,366
'84	52	207	65,331	244,186	1,300,331	24,307	29,435
'85	52	217	70,066	288,945	1,438,220	27,314	39,641
'86	60	231	79,874	333,653	1,857,152	36,942	50,398

TABLE IX.—*Showing the Position of Forty-One Co-operative Productive Societies in* 1876 (*see p.* 41).

Object of Manufacture.	Name of Society.	Date Established.	Number of Members.	Shares	Loans.	Stock.	Sales.	Profit.
				£	£	£	£	£
Corn milling	Derwent (Shotley Bridge)	1872	—	4,500	5,824	3,937	52,139	983
" ...	Easingwold	'55	—	—	—	1,636	17,405	1,434
" ...	Great Grimsby	'72	74	1,711	4,950	—	—	—
" ...	Halifax	'47	2,416	75 572	—	44,122	207,648	17,147
" ...	Hull Anti-mill	1795	4,746	5,932	—	1,317	59,111	3,158
" ...	" United	1866	101	500	2,335	437	5,559	51
" ...	" Subscription	'01	2,010	3.675	—	510	8,960	369
" ...	Midland Federal	'75	17	2,248	4,238	—	—	—
" ...	Northallerton	'57	900	1,834	—	871	13,490	1,811
" ...	Oldham Star	'68	237	28,423	26,288	18,812	191,278	5,916
" ...	Rochdale	'50	688	73,179	4,100	41,642	176,671	2,166
" ...	Sowerby Bridge	'54	3,975	94,894	—	48,294	406,017	23,455
Farming	North Seaton	'72	117	153	87	85	551	—
Cotton cloth	Rochdale Manufacturing	'54	1,152	66,430	54,293	34,149	173,163	8,029
Fustian	Hebden Bridge	'70	366	11,938	5,000	3,831	19,500	1,423
Hosiery	Leicester First	'72	115	812	491	1,450	3,595	77
"	Arnold (Notts.)	'68	66	249	7	396	405	33
"	Hawick	'73	513	2,185	1,099	—	—	—
Linen	Dunfermline	'72	160	629	324	819	1,709	105
Quilt	Eccles	'61	155	4,080	2,233	2,414	7,127	—
Silk	Newton Heath	'73	56	219	102	299	642	21
"	Leek	'74	25	495	350	620	1,537	164
Worsted	Airedale	'71	137	964	283	1,767	6,277	536
Woollen and cotton	Paisley	'62	251	2,368	4,107	4,050	7,042	499
Bleaching	Strathaven Bleaching	'62	40	460	—	460	—	—
	" Manufacturing	'76	30	78	21	73	119	11
Nails	Orrell (Wigan)	'68	21	100	—	84	260	21
Locks	Wolverhampton	'64	73	2,336	288	2,838	11,900	1,667
"	Walsall	'74	23	828	109	754	3,412	53
Chains	Cradley Heath	'71	235	522	—	294	110	—
Horse shoeing	Metropolitan	'64	34	750	1,073	328	2,855	798
Engineering	Sheffield	'73	13	767	974	1,403	1,228	32
"	Huddersfield	'74	88	1,314	33	289	1,775	194
Quarry	Howley	'72	179	4,892	1,150	256	7,543	317
Masons	Keighley	'68	22	96	335	1,109	3,723	693
Printing	Co-operative (Manchester)	'69	363	10,704	24,391	9,755	24,272	1,046
"	Hanley	'71	76	901	365	69	2,004	—
Shipbuilders	Blyth	'69	19	2,070	1,335	—	—	—
Painters	Birmingham	'75	66	107	189	120	483	—
Tobacco	Alpha (Bethnal Green)	'71	8	176	470	—	4,120	—
Coal mining	United (Manchester)	'73	134	12,134	8,696	620	15,726	1,938
	Total	—	19,701	420,725	155,540	229,905	1,439,356	74,147

Note.—Number of societies making returns, forty-one.

DISCUSSION on MR. BENJAMIN JONES'S PAPER.

MR. E. VANSITTART NEALE said he had very little to add to what had been said in the very full, complete, and excellent paper. One omission however he would notice, namely, the absence of any reference to the present Industrial and Provident Societies Act passed in 1876 to consolidate and amend the law relating to these societies, which gave them all the advantages for carrying on their business enjoyed by the more wealthy associations formed under the Joint Stock Companies Act, including the power of holding land to an unlimited extent. Naturally the success of co-operative enterprise must depend upon the wisdom with which it was conducted; he would add also upon the heartiness with which their promoters entered into those higher objects and aims that the Rochdale Pioneers originally set before themselves, and from which he was afraid co-operators had to a certain extent backslidden. These societies were mainly formed of consumers, and consumers had a perfectly insatiable appetite for eating up everything, including the benefit which ought to go to the workers. The purchasers were legitimately entitled to the large benefits which they might secure from the retailers' profits as to production; but then the manufacturers' profits should, as he held, be employed for the permanent elevation of the mass of those who did the work. In respect to the amount of co-operative trade, Mr. Jones had suggested that the productive sales required to be added to the amount given in the registrar's returns. But this appeared to him to be a mistake. The societies returned the total amount of goods sold, whether the goods had been bought or made by themselves. There was no need therefore of this addition. In another respect there was danger of an error which care should be taken to avoid, namely, the danger of counting sales of goods once or twice as sold by the wholesales to the retail societies, and again as sold by the retail societies to their members. No doubt the wholesale sales expressed an additional amount of business done, but not an increased quantity of goods sold. In order to obviate this danger it was the practice in the analysis of the registrar's returns published every year in the reports of the co-operative congresses, to distinguish the retail sales from the wholesale, stating each separately, so that no one might imagine the co-operative trade to be 9 or 10 millions more than it really was. The paper had indeed distinguished these amounts, but with some tendency to run them together in its totals. He wished therefore to call attention to the fact that in the official co-operative statistics annually published the returns were carefully distinguished so as to get the actual amount of goods sold without any sort of exaggeration. But after every allowance of this sort had been made, the figures before them were an evidence that the working population had in their co-operative trade really tapped a very considerable source of wealth. This was a fact of no small importance. Nothing in his opinion was better calculated to correct the wild and extravagant ideas afloat at the present day than this fact, that the steady, industrious, and thoughtful portion of the working population were now able to raise themselves up not by pulling others down, but by associating themselves together for co-operative ends.

Mr. G. J. HOLYOAKE said the author had given an exhaustive and complete account of the commercial organisation and progress of co-operation; and no doubt if he could have taken more time he would have described other aims than those already mentioned, aims of which Mr. Neale and himself thought more than of the material progress that had yet been made. In co-operation there were strata of opinion as there were in the geological world. He belonged to the old red sandstone formation. He was with co-operation when it began, and observed the process of its evolution from Owenite societies. Mr. Jones had cited one famous clause from the rules of the Rochdale Pioneers which contained the aspiration which the old Pioneers had. He (Mr. Holyoake) said the words written which declared that their objects were to "arrange education, production, and government." They were dissatisfied with the limited education that then existed. They wanted also to found stores upon lines which should secure to the workman equal advantages with the purchaser. Those lines were laid down by one Charles Howard, of the Rochdale Society. The Hull Corn Mill, the Govan, and Sheerness Societies were not co-operative in any modern sense; they were merely small joint stock associations for the advantage of a few shareholders. Mr. Howard proposed that the shareholders should have simply 5 per cent. interest upon their capital, and that all other profits should be given to the purchasers. That seemed then a foolish thing to propose, seeing that few societies made any profit. Yet that was the principle which made co-operation, for as soon as the purchasers had a tangible interest in the results, the sales increased and profits and members accumulated. It was how those large sums of money came to appear in the tables given by the author of the paper read. These early co-operators intended that the profit should be divided amongst the purchasers. They intended to and did establish co-operative mills in which the profits were divided according to the wages of the workmen, as in the stores they were divided according to the purchases. The shopkeepers took shares in the Rochdale Cotton Mill. The shopkeepers did not take shares in the stores because they were shop owners, but they were not mill owners, and therefore they took shares in the mill. As soon as they became the majority they stopped all profit to the workmen, and in Rochdale to this day the profits of the workshop (speaking in a co-operative sense) have been looted by the shareholders. He hoped to see the principle of co-operation grow so that what was now done in the store should also be done in the workshop. He cared much for the progress they had made, which however was small compared with that which they would have made if they had been as faithful to the workshop as they had been to the store. He honoured very much the men concerned in their great wholesale co-operative organisation for the wisdom and patience with which they had built up that great commercial enterprise; but when they began to establish workshops they gave the profit to the stores, who, like the capitalist, appropriated the earnings of labour. That was not co-operation as the pioneers conceived it. One of their higher aims therefore was to diffuse such knowledge as should concede to the workman an equitable share of the profits that he created. Another of their aims was to induce purchasers to give an adequate price for that which they bought, and to inquire, so far as they had the means of doing it, whether the workpeople who produced the article bought so cheaply had any profit from its production. To buy without trying to know whether the producers of the article lived by their work and had some prospect of competence by labour, was in his opinion an immorality. It was heartlessness to prefer cheapness to human welfare. It was now the acknowledged duty of society not merely to punish crime or to cure disease, but to prevent it. The causes of poverty were as well known as the causes of disease, and might be as certainly prevented. If only half of the millions of profits produced in workshops were divided among the workmen who produced it, pauperism would be no more known in our land. These were some of the higher aims of co-operation. If in years to come they would be told that it had succeeded in the workshops as it had already succeeded in the stores, the statistics of its progress would be far more eloquent and interesting than those Mr. Jones had placed before this Society.

Rev. ISAAC DOXSEY said one result of that discussion could not fail to be the uplifting, in the estimation of the many, of their working men. When they learnt that a million of working men were affected by this co-operative movement, and had been developing an amount of tact and prudence, and patience, and perseverance, which were among the noblest elements of British character, he was sure that they would have a higher esteem for working men than had yet been given to them. He quite agreed with Mr. Holyoake with regard to the question of dealing with the workshops, and hoped that in process of time something more would be heard on that question. The co-operative movement had, in the main, grown up within the history of this Society's existence, and it was a grand thing to see the progress that had been made. In 1862 the sales from co-operative stores were 2,333,000*l.*, while in 1881, twenty years afterwards, the annual sales reached 20,901,000. During those twenty years these stores had sold goods to the amount of 223 millions, and had made a profit of 17,450,000*l.* Although Mr. Holyoake might naturally object in some respects to the way in which the profits were divided, it must be remembered that the profits were divided for the most part among the working classes, and 17 millions of money to be divided among a million of working men in that time was no mean consideration. The sales had increased in that time from 4 to 29 millions, though possibly a little mistake had been made in not accounting for the goods that came through one society to another. It was rather curious that the London "Wholesale," with a return of 5¼ millions, had only made a profit of 83,000*l.*, or 1·595 per cent., while the Scottish "Wholesale" on a return of 1,857,000*l.*, made 50,000*l.*, or 2·7 per cent. It might be that the Scotchmen understood the management of these things better than the southerners; but he referred to this not merely for the purpose of contrasting the profits made, but to show at how small a ratio of profit the whole of this vast business had been transacted. Of course there were objections to be raised by wholesale and retail traders that some men were displaced by the operation of the co-operative societies, but while some were displaced others were provided for who were not before, and the ultimate outcome would undoubtedly be that everyone would get more fairly paid for what he did for the service of his fellows.

Mr. E. V. **Neale** explained that the larger ratio of profit made by the Scottish "Wholesale," was, as he was informed, mainly owing to the wholesale dealers in Scotland habitually carrying on to some extent what would be regarded in England as retail business.

Professor H. S. **Foxwell** said it was clear that the fundamental principle of co-operation was partnership and common interest, and that as the movement developed, this partnership must be extended until it embraced the workshop as well as the store. The marvellous success of distributive co-operation was due to giving the purchaser an interest in the business done by the store. The idea of taking the consumer into direct partnership was the brilliant invention of the Rochdale pioneers. It found the co-operative movement almost extinct; it made it what we know it to be to-day. Why should not the producer be taken into partnership in the same way, and with similar results? It seemed to him that partnership was even more essential in the case of the producer than of the consumer. Production was more difficult to manage than distribution. No precaution should be neglected which would diminish the difficulties of management; nothing was so calculated to do this as the adoption of the principle of profit-sharing. At the same time they should not too hastily condemn co-operators for hesitating at once to introduce it; because private employers, to whose experience they might naturally look for an example, had in this country very generally held aloof from it. Why this should be so in England, when profit-sharing had obtained so remarkable a success on the other side of the channel, it was not easy to say. It was very much to be desired that any objections which were felt to profit-sharing should be distinctly formulated. He had not heard of any difficulties which could not be overcome by a little perseverance, management, and tact. The presumption was clearly in favour of the principle. Its adoption would arouse so much interest and enthusiasm, that there would be a considerable increase in production without any increase, possibly with even a diminution of toil. This was a point he was glad to have an opportunity of insisting upon. Profit-sharing was distrusted both by employer and employed. The employer thought any profits given to the workman must be lost by himself. The workman thought that any profits he would obtain must be due to increased labour on his part. The fact was that there might be a large creation of profit in most concerns without any additional labour on the part of any concerned. If the worker were directly interested in profits, much waste and costly supervision might be saved. Work would become more careful and more intelligent without being more laborious. On the contrary, the new interest imparted to the work would make it distinctly lighter and more pleasurable. Thus the output and net profits might be largely increased without adding to the labour. The really painful element in work, its toilsomeness, might be substantially reduced. It was chiefly to an increase of production, obtained in this and similar ways, that they must look for any considerable and permanent improvement in the position of the working classes.

Mr. STEPHEN BOURNE said they were indebted to the author for a further insight into the true principles of co-operation, as to which there had been a great deal of misconception. The supply associations which were the rage in these days had done a very good and important work in one direction, but they must be dissociated altogether from the true principles of co-operation, which were that the articles distributed amongst the purchasers should be so distributed at the ordinary prices, and that the purchasers should accumulate the profits and thus encourage thrift. A wide distinction must in his opinion be drawn between the application of co-operation to production and distribution. The task of distribution was comparatively easy; it was a transaction begun and completed at the moment; but when they came to the question of production, there was a long course of preparation needed; capital must be invested in the purchase of plant and materials, and the business could not be carried on from hand to mouth in the same way as the distributive process. They must look forward to co-operation, however, as the right and proper principle, because the workman ought to have the largest share in the profits accruing from his labour instead of the capitalist; and one of the great evils under which this country groaned was the large accumulations of capitalists and the power which they had to compel consumers of articles at times to pay what they chose to exact. He did not agree with Mr. Holyoake that it was the duty of the purchaser to satisfy himself that the workman had had a fair remuneration for the goods which he had produced, because that would be utterly impossible.

Mr. HOLYOAKE said he agreed that it was impossible under present conditions, but if they had co-operative workshops it could be easily ascertained.

Mr. STEPHEN BOURNE said the assumption often made in these days must not be lost sight of, namely, that the workman was the only honest person in the transaction, that he was the only person content to receive a fair sum for his labour. Workmen were very often exacting in their demands, and the price of many articles of ordinary consumption was enhanced because the workmen chose to demand too much or to misappropriate the proceeds of the consumers' money. Before therefore they could have productive co-operation carried out to anything like a proper extent so as to enhance the welfare of the community, the workmen must rise to a better sense of the responsibility which they were under as members of society to make a right use of the means they had. The real drawback to the working men of the country was not so much the grinding power of the capitalist or the greed of the consumer, as his own improvidence of time, labour, and money.

Mr. **George Seton** wished to know to what extent this co-operative movement had reached down to the lowest class, whether it embraced the labouring class, the class distinctly below the skilled workman. It had been said by some economist that the "curse of the poor was their poverty." It was those who were thus most cursed whom they could wish to be most benefited by this co-operative movement. He was inclined to think it was not they who benefited by it the most, but rather the higher class of workman, to whom perhaps it was less necessary that this benefit should go. With regard to the economic question, the author had indicated that the general line of the distribution of profit under this co-operative system was that the full dealers' price was charged and the profit credited to the consumer. He asked whether this might not have in many respects an injurious effect on the consumer. A very vicious system had been introduced amongst traders, called the bonus system, and it was a question whether it had not been more or less stimulated by the system which had been followed by co-operators, of instead of reducing the price, returning so much to the consumer.

Major **Craigie** said he had given some attention to the question of the application of the co-operative principle to farming. He would have been glad if Mr. Jones could have supplied more information on this head. Certainly the balance sheets that had been shown him of late had been extremely discouraging, and did not indicate any greater degree of success than in the ordinary system of individual farming. Perhaps the most recent case made public gave the figures of the co-operative experiment promoted by Earl Spencer at Harlesden in Northamptonshire. Lord Spencer himself found all the capital; the result at the end of the last year, in April, 1887, was a loss of 207*l.* on a nominal capital of 3,000*l.* The co-operative experiments of Mr. Bolton King had for the last year or two distinctly shown a loss. In 1885 the loss on the best known farms at Redbourne was 613*l.*, and in the following year it was nearly 400*l.* How then were they to consider the possibility of co-operative enterprise continuing with losses such as had been almost invariably the result of the attempt to adapt this principle to agriculture? The late speaker of the House of Commons, Lord

Hampden, it would be remembered, employed labourers who were to share in the profits of his farm at Glynde, but he believed it had been discovered that labourers would be extremely reluctant if not quite unable to share the losses when the balance was on the other side of the account. He asked the author whether he had not in the recorded experiences of these attempts had reason to doubt the adaptability of the co-operative system to farming?

Mr. H. G. **Rawson** said that strictly speaking five at least of the seven instances of co-operative farming mentioned by the author were not co-operative: they were rather cases of industrial partnership or profit-sharing, the capital not being found by the co-operatives themselves. It was a question worthy of discussion how far any productive society had been successful when unconnected with some distributive society pledged to support it; and it would have been a great addition to the interest of the paper if some expression of opinion had been given on that point. For himself he felt some doubt whether even co-operation or profit-sharing could make farming pay at the present day. As a rule their introduction into agricultural enterprises had not been attended with very satisfactory results financially speaking. Some, *e.g.*, Mr. William Lawson of Blennerhasset in Cumberland, had attributed this to the difficulty of finding intelligent co-operators among agricultural labourers; but this could scarcely be the true reason. Still it was remarkable that on the continent the principle of profit-sharing had been applied to farming for years past with great success. It would be interesting to know whether any of the societies mentioned in Table III of the Appendix which now showed a profit on their farming operations had been long established, and were independent of any affiliated distributive societies.

The **Chairman** (Mr. Frederick Hendriks) said the author of the paper enumerated the number of members of the retail co-operative societies in 1886 at something over 809,000. This however ought not to be taken as representing the full number or proportion of the population interested in such societies. The great majority of their numbers must be married persons, as single working class men or women would scarcely become shareholders to any great extent. We should not be very wide of the mark if, after due allowance for some unmarried members, we put the average number in each member's family at 4·25 persons. This would make the number of persons, for whose benefit and cheap consumption of commodities these societies were formed, amount to upwards of 3½ millions, so that more than one-tenth of the whole population of Great Britain was thus brought within their influence. The share capital of 8,049,654*l.* was distributed amongst 809,417 members, say 9*l.* 19*s.*, or nearly 10*l.* per member. Out of each 10*l.* of capital, no less than 4*l.* 13*s.* 8*d.* remained invested in land, buildings, and fixtures. This to some extent was in itself an answer to the objections which had been made that evening by a preceding speaker (Mr. Vansittart Neale) to the effect that these co-operative societies had not devoted enough of their means to property in land. The total value of their holdings in land, buildings, and fixtures amounted to no less a sum than 3,791,345*l*. Their next largest investment was the value of their stock in trade. This was put at 2,520,132*l*., or say 3*l*. 2*s*. 3*d*. out of each 10*l*. of capital. Then came investments in other societies, valued at 2,152,987*l*., or about 2*l*. 13*s*. 2*d*. out of each 10*l*. of capital. They possessed reserve funds of 337,546*l*., or 8*s*. 3*d*. to each 10*l*. of capital. These items together would show a total of 10*l*. 17*s*. 4*d*. per 10*l*. of original share capital. But from it there fell to be deducted 1*l*. 1*s*. 4*d*. per 10*l*. for indebtedness under loan capital, so that the net sum remaining was about 98 per cent. of the original capital, part of the 2 per cent. loss having arisen doubtless from depreciation in the value of land. If the goods sold in the year were reduced to an average, it would be found that the gross amount of the purchases of each of the 809,417 members amounted to 25*l*. 18*s*. 6*d*. Then came the very interesting question, how much of the 25*l*. 18*s*. 6*d*. came back to each member out of profits? Mr. Jones stated that the net profits of the retail distributive societies, after paying interest on shares, were 2,819,081*l*. out of 20,975,374*l*. of goods sold in 1886. Now as the *pro ratâ* distribution to customers, in this case all shareholders, was regulated by the total of their purchases, it follows that each must have had returned to him about 13·44, or close upon 13½ per cent. of what he had paid for goods, say 3*l*. 9*s*. 8*d*. out of an average outlay of 25*l*. 18*s*. 6*d*. But this is only one way of putting the case. The results may be given in another form with equal correctness. It may be said that the whole results arise from the association of small capitals. Here we have 8,049,654*l*. of original share capital paid up; the depreciation of 2 per cent. before alluded to may here be disregarded. What did that amount of capital yield to the shareholders in 1886? The answer is that it yielded (1) interest at (as he understood Mr. Jones to explain in answer to his question) an average of 4 per cent. This then must have amounted to about 321,986*l*. in addition (2) to the 2,819,081*l*. year's net profits from goods sold. We have then a total year's return of 3,141,067*l*. arising out of a capital of 8,049,654*l*., or over 39 per cent. per annum on capital, or say 35 per cent. beyond what some would consider its normal recompense at 4 per cent. It was rather a surprising result to find that retail trade, conducted by the skill and intelligence of the working classes themselves, could produce so large a rate of profit out of retail business. A speaker that evening (Mr. Holyoake) spoke with some complaint of the producer not being able to get an equally fair share of profits with the consumer. But surely amongst the large number of working men and their families, some 3½ million souls, and one-tenth of the whole population of Great Britain, there must be almost as many producers as consumers of commodities sharing in the advantages of these working class co-operative societies. Then, again, he (Mr. Hendriks) must observe that much as he admired the sound sense which pervaded the paper of Mr. Jones, he disagreed with him in that passage of it where it was stated without sign of dissent that co-operators in these working class societies "believe that by becoming possessors of capital and combining together in using it, they can reduce the interest or remuneration to be paid to capitalists to a very small figure, much below what they have hitherto received." Surely if this had been the real view of the great body of the working classes who had put capital into these societies, they would rather have confined themselves to the modest 4 per cent. upon their 8 millions of capital, and have applied the remaining surplus, 35 per cent., to the cheapening of commodities, not to themselves alone as shareholders, but to the working classes generally, whether producers or consumers it would not be necessary to distinguish. Mr. Jones's paper included some statistics on what had been contributed by these co-operative societies to the promotion of education and charity in the shape of money grants, but the amounts were not important, not being more than *6d.* per member for educational and *2d.* per member for charitable purposes. In conclusion he could not but think that the results of the working class co-operative movement had so far been wonderfully successful, that they showed remarkable administrative power, and were destined as time went on to attain a far greater development than was indicated by their present position. He begged to move that the best thanks of the meeting be presented to Mr. Benjamin Jones for his admirable paper and well arranged statistics.

Mr. BENJAMIN JONES in reply said it must be borne in mind that the profits went to the consumer and not to the capitalist, and that when they divided the profits into the capital and said that that made 35 per cent., he might even go further and say that before they got to the 35 per cent. the capitalists had had 4 or 5 per cent. already. The profit was divided in proportion to the amount of trade and not to the amount of capital. Dividing all the profits among the capitalists was the objection that Mr. Holyoake took to the older form of co-operative societies; but the theory of a number of these older societies was that each member should have an equal amount of capital. In the existing co-operative societies facilities were given to the very poorest to join if they only cared about doing so. He had no information beyond that contained in Table III with regard to the farming. Four societies were marked as having made a profit, and two made a loss; one was a small loss of *9l.*, and he had not the slightest doubt that this was really a case of making profit, as they would charge 5 per cent. interest on the capital in their expenses. Most of these farms had been taken within the last two years, and as they knew farming must not be reckoned simply by the result of one or two years' working. They must give it a fair chance in what might be called a succession of seasons, and when that was done co-operators believed that they would have a fair profit left upon the average. If they found it was not so, they might rest assured that the thing would be given up as a bad job. He did not think the bonus system of co-operation had done harm, but on the contrary the result had been to encourage the accumulation of capital. The theory had been that if co-operators got their benefits in farthings and halfpence they would not appreciate them, but when they got them in a lump sum at the end of the quarter they felt the benefit. Practically they found the bonus theory was the best to work upon, and it was likely to continue a good while longer. He was convinced that there was a great deal to be said for both of the two schools into which co-operators are divided. We ought each to try to work out that plan that we think best. The individual productive or autonomist school has suffered from failures far more severely than the federalists, who indeed have suffered scarcely anything. What I say to the autonomists is this that they ought to set to work vigorously to practically carry out their views, and not rest content with asserting their superiority. He had not referred to the law as affecting these societies, because Mr. Brabrook had already read two papers on that subject.

Some CANADIAN RAILWAY *and* COMMERCIAL STATISTICS.

By JOSEPH G. COLMER, ESQ.

[Read before the Royal Statistical Society, 21st February, 1888. FREDERICK HENDRIKS, Esq., F.I.A., a Vice-President, in the Chair.]

So many papers have been read during the past few years with reference to the Dominion of Canada, and so little ground has been left uncovered, that I must own to feeling some difficulty in choosing a subject, when honoured with an invitation to read a paper before this Society. However, after consideration, I have decided to place before you some observations on the development of railways and the growth of trade and commerce in Canada since the Confederation of the various provinces, and on some of the results expected to follow the completion of the Canadian Pacific Railway, a work which has justly attracted attention in most parts of the world.

It is necessary to point out in the first place, that the rapid extension of railways in Canada (see Appendix A) has been mainly owing to the manner in which such enterprises have been assisted by the Dominion and Provincial Governments and by municipalities. This encouragement has assumed a much more tangible form than mere benevolent approval, for it has taken the shape of large subsidies of money, and in many cases, in recent years, of extensive grants of fertile land. There is a special department of the Dominion Government to deal with matters relating to the railways and canals of the country, with a cabinet minister at its head; and it may be stated in passing that out of an amount of about 135 million £ sterling expended on railways, the Canadian people have in one way and another contributed 32 million £. The result of this policy is that new districts have been opened up, and older settlements developed, with a rapidity which would probably have been impossible in any other circumstances. In most of the colonies the railways belong to and are worked by the Governments, but this principle does not obtain in Canada, with the two exceptions of the Intercolonial and Prince Edward Island Railways, which were entirely constructed with public money. The other lines are in the hands of companies, which have raised and spent the money required for construction and other purposes, and any subsidies of money or of land given by Governments or municipalities have as a rule been handed over absolutely, and, excepting in the case of land, forms an annual charge upon the people. The land soon becomes of considerable value to the railway companies, as its price is naturally largely increased by the opening up of means of communication, and immediately represents a valuable asset. In addition, its settlement causes money to flow into the railway exchequer in the shape of earnings for the carriage of increased traffic. The policy which has governed railway construction in Canada is very different to that prevailing in England. In the former, lines have frequently been made into the wilderness, as the advance guards of civilisation, opening up fertile lands for the use of man which would otherwise have remained inaccessible. They have not always returned dividends immediately, but the capital has generally been issued at a discount, and taken up with a full knowledge of the circumstances, and in the hope of future increment in value. Great Britain, on the other hand, has had to deal with a limited extent of country and a greater density of population—advantages from a railway, if not from a national point of view, and favourable for the raising of capital without the aid of the State.

Railway construction in Canada did not proceed at a very rapid rate prior to 1867. The first railway opened was in 1837, and to the province of Quebec belongs this honour. It ran from La Prairie—a small town 7 miles from Montreal—to St. Johns, a distance of 16 miles. The line was first worked by horses, and then by steam, but its use was discontinued some years after, and the rails removed on the construction of the Champlain Railway, now a portion of the Grand Trunk system. No further railways were built till 1845, and even in 1850 only 71 miles were in operation. In the latter year, however, considerable activity appears to have been awakened, several new and important undertakings were commenced, notably the Grand Trunk, Great Western, and Northern Railways, and in 1860 some 2,087 miles had been completed. This was increased to 2,380 in 1867, and in Appendix B will be found a statement giving the names of the lines then in operation, and the cost of their construction. Railway statistics for that period are not easily obtainable, but it is interesting to know that in 1866 the earnings of 2,150 miles of line were 11½ million of dollars, and the expenses 6½ millions, leaving a surplus of 5 millions, sufficient to pay nearly five per cent. upon the capital contributed by the public. About this time several new companies were incorporated, and the mileage increased gradually until in 1874 it is recorded as 2,642. In 1875 it had advanced to 4,826, owing to the completion of works in progress on the Great Western, Intercolonial, Prince Edward Island, and other railways. The rapid increase continued, until in 1886 there were 10,697 miles in operation, while 11,523 miles were actually completed, and a further 751 miles under construction (see table in Appendix). Of this mileage the Government have constructed and work 1,190 miles. Included in the figures are of course the 4,319 miles owned and controlled by the Canadian Pacific Railway Company, whose line from ocean to ocean was completed in 1885. To summarise, the miles of railway in operation increased from 2,258 in 1867 to 10,697 in 1886. In the same period the population advanced from 3,400,000 to nearly 5,000,000, the annual revenue from $13,687,928 to $33,177,040, and the annual trade—not including the inter-provincial trade—from $131,027,532 to $189,675,875. This forms a very satisfactory and striking record of the progress made in recent years, and considering the immense area of country still to be opened up for settlement, and the varied nature of its resources, it is certain beyond a doubt that great development will be apparent in the future. Canada now comes after Great Britain and India (even if not entitled to precede India) in the British Empire in the extent of railways, and in the 1885 returns of the railways of the world she held the eighth place on the list, a position most creditable to a community containing but 5 millions of people. As the result it is now possible to travel from any Canadian Atlantic port to the Pacific ocean entirely through British territory, and there are no places on the way of any importance which do not possess the advantages of railway communication.

It is the custom of many persons to shrug their shoulders eloquently when mention is made of railways in Canada as an investment. I wish to claim your attention for a few minutes on this matter, as it is one of great importance. I will take as the basis of my remarks the list of railways, in whose bonds and stocks transactions take place in London, quoted each week in the "Canadian Gazette." The nominal capital included in this statement amounts to about 104 million £ sterling. An analysis shows that 34,481,908*l.* of this (including over 8 million £ of Grand Trunk capital) is quoted at par and above, and regularly pays dividends varying from 4 per cent. upwards. Then there is 58,017,461*l.* quoted under par, of which however 18,969,995*l.* (including about 2 million £ of Grand Trunk capital) regularly pays dividends; of the balance of 39,047,466*l.*, 38,091,466*l.* represents Grand Trunk Railway capital, 17,933,791*l.* of which has paid dividends frequently, while on the remainder, that is the ordinary stock, no dividends have ever been paid. The remaining 11½ millions is not quoted on the market, but it is not by any means worthless. Seven and a half millions of the stock is not known on the London market, is held by contractors or other companies,

Google

or at any rate is not in the possession of the public. I have the authority of the editor of the "Stock Exchange Year Book" for this statement. Of the remaining 4 millions more than 3 millions is dividend paying, and is not quoted because there is no demand for it. Deducting the Grand Trunk capital not earning dividend in 1886, and the stock mentioned as not known here, the amount invested in Canadian railways is reduced to about 58½ million £, over 56½ millions of which is dividend earning, and cannot be purchased below its par value except in a very few cases.

It is right I should explain that my calculations of the dividends earned by Canadian railways were taken from financial publications issued early in 1887, which of course dealt with the first half of the previous year only. Since however my paper has been printed, the 1888 editions of the works referred to have been published, and they strengthen my case considerably. For I find that the 4 per cent. guaranteed stock of the Grand Trunk Railway, amounting to 5,219,194*l.*, paid dividends in May and October last year, and also the arrears of the first six months of 1886. In addition, the first preference stock, 3,218,149*l.*, paid 2 per cent. in October last. Then again for the half year ended 31st December last, dividends are to be paid on the 4 per cent. guaranteed stock (5,219,794*l.*). The full dividend of 5 per cent. is also to be paid on the first preference stock (3,218,149*l.*) for the whole year, and a dividend at the rate of 13*s.* 4*d.* per annum on the second preference stock (2,327,795*l.*). Therefore this leaves about 7,168,055*l.* of Grand Trunk third preference stock (which has paid dividends in the last few years, though not recently), and the ordinary stock as not at present earning any dividend. To the extent by which the amount of Grand Trunk capital not earning dividend is reduced, so is the proportion of capital invested in the Canadian railways which is dividend-earning increased, and by so much is my contention strengthened, that the general unfavourable reputation which has been given to Canadian railways as investments is not deserved.

As to the Grand Trunk Railway, let me say that it has been an immense boon to the country, and an important factor in its development. It is a matter for regret not only to the shareholders, but in many other ways, that its success as a financial enterprise has, owing to exceptional circumstances, been somewhat delayed, but for this Canada is not to blame. Indeed the country has suffered from it, as it is indirectly responsible for the diversion of a good deal of capital and labour which might otherwise have been used to open up its varied resources. The future of the district served by the railway has no doubt been somewhat discounted, but I look upon that future hopefully, and there are many who believe, both in Canada and in Great Britain, that there is an era of prosperity before the company. It owns and controls about 2,600 miles of line in the Dominion, and besides has most valuable connections with the United States' railway system; the country through which it runs is very fertile and by no means so well populated as it is bound to be at no very distant date; and the general development of agriculture, manufactures, and trade and commerce which is taking place must beneficially affect all railways. There can be no doubt whatever that in the future as in the past, the Grand Trunk Railway is bound to be inseparably associated with the progress of the Dominion, and to share in connection with other Canadian railways the prosperity that is believed to be before the country.

A few words as to the railways worked by the Government will no doubt be interesting. The main line of the Intercolonial Railway runs from Halifax to Quebec, a distance of 688 miles, and forms a part of the through mail line from the Atlantic to the Pacific Ocean. The construction of the railway was one of the conditions upon which the maritime provinces joined the Confederation, and it was also desired for military purposes by the Imperial Government, who guaranteed the interest on a loan not exceeding 15 million $ towards its cost. It is largely owing to official representations that, for military reasons, the line takes an apparently circuitous route. The total mileage, including branches, is 886 miles, and the amount expended upon the railway up to the 30th June, 1886, was about 9 million £ sterling. It is hardly necessary to say that the guarantee referred to was purely a formal matter, as Canada has regularly paid the interest upon the money borrowed for the purpose, and the Imperial Government has never therefore been required to contribute a penny towards the expenditure. The following figures will give an idea of the progress made by the railway in recent years:—

	1880.	1886.
Earnings	$1,506,298	$2,383,201
Freight carried .... tons	561,294	1,008.545
Passengers carried .... No.	581,483	889,864

The expenses however have more than kept pace with the increase in the earnings, and there is usually a small deficit, which has to be made up out of the Canadian revenue. Sometimes it is very small, and in 1886 it was about 20,000*l*. This is largely owing to the route taken by the railway, and to the fact that low rates are charged by the Government primarily to encourage trade and commerce, and to develop the country through which it passes. It has been an important factor in the commercial and political development of the maritime provinces, and indeed of the whole of Canada, for without it confederation would have been more or less impossible, and the Dominion would have been barred from access to the Atlantic Ocean in the winter excepting through the United States.

The Windsor branch, which runs from Halifax to Windsor (32 miles), is maintained by the Government, but worked by the Windsor and Annapolis Railway Company. The Government's share of the earnings is generally sufficient to cover the expenses of maintenance. In 1886 there was a profit shown of $4,429.

What is known as the Eastern Extension Railway extends from New Glasgow to Port Mulgrave on the Straits of Canso, and connects with Cape Breton by means of a ferry. It is 80 miles long, and was purchased from the Nova Scotian Government in 1884 by the Dominion Government for $1,200,000. The total capital expenditure to June, 1886, was $1,284,496. In 1885-86 the earnings were $66,893, and the expenses $94,756. The repairs and renewals were exceptionally heavy, and there was a decrease in the earnings due to a falling off in the fish traffic.

The Prince Edward Island Railway, with a mileage of 211½ miles, was opened for traffic in April, 1875. It was built as a condition of the Island joining the Confederation. Its cost up to the 30th June, 1886, was $3,735,981. The traffic of the road is comparatively light, and it is likely to be some time before the receipts cover the expenditure. In 1885-86 the earnings were $155,584, and the expenses $216,744.

As a net result the Government railways in 1885-86 were worked at a loss of $190,637, which was larger by $65,170 than in the preceding year, but it is stated in the Official Statistical Abstract in explanation, that on the Intercolonial Railway $115,000 were spent for improvements generally charged to capital, and that the repairs necessary on the Eastern Extension Railway were unusually heavy.

Taking the financial position of the Canadian railways however as a whole, the result is very satisfactory. The total capital from all sources so invested is $653,376,144, but from this must be deducted Government and municipal aid amounting in all to $156,904,449, leaving a balance of $496,471,704 as representing the capital subscribed by the public. For this sum, which is about equal to the capital of the London and North Western Railway Company with its 1,800 miles of line, Canada has a mileage of close upon 12,000. I append a statement showing the traffic and working expenses for the last ten years, for the last few years of which it must be remembered that Canada has felt, to a certain extent, that wave of depression which has been passing over the world.

Year.	Miles.	Number of Passengers Carried.	Tons of Freight Carried.	Earnings, in Dollars.	Working Expenses, in Dollars.
1877	5,574	6,073,233	6,859,796	18,742,053	15,290,091
'78	6,143	6,443,924	7,883,472	20,520,078	16,100,102
'79	6,484	6,523,816	8,348,810	19,925,066	16,188,282
'80	6,891	6,462,948	9,938,858	23,561,447	16,840,705
'81	7,260	6,943,671	12,065,323	27,985,509	20,121,418
'82	7,530	9,352,325	13,575,787	29,027,789	22,390,709
'83	8,726	9,579,948	13,266,255	33,244,586	24,691,667
'84	9,658	9,981,358	13,712,269	33,481,705	25,595,342
'85	10,149	9,672,599	14,659,271	32,227,469	24,015,351
'86	10,697	9,861,024	15,670,460	33,389,382	24,177,582

It must be borne in mind that many hundreds of miles of the railways constructed since 1880 run through districts very thinly inhabited at present, and have not yet made any appreciable effect upon the above returns. The passenger traffic has however increased by more than 50 per cent. since 1877, freight traffic by 130 per cent., earnings by 83 per cent., while the working expenses are only 60 per cent higher than they were. The proportion of working expenses to receipts in 1877 was 81 per cent., in 1886 it was 72 per cent. Things therefore seem to be moving in the right direction. I can remember the time when some of our great English lines were not as prosperous as they are now, and I think that an examination of the Board of Trade returns would reveal the fact that there is still a very large amount of capital locked up in British railways which does not yield any return. But as I have shown the financial position of Canadian railways is on the whole very satisfactory, and the country is only on the threshold of the progress that is before it. Canada has 12,000 miles of railways, representing a capital of about 8,500*l.* per mile. The Atlantic and Pacific provinces are now connected, and with an outlet on the Pacific as well as on the Atlantic, the opportunities and facilities for development are greater than at any previous time. These new facilities have not yet been availed of to any great extent, but it will be generally admitted that in consequence of their existence and the rapid increase in trade and commerce which is expected to follow, the railway outlook, in connection with future traffic, earnings, and profits, is very hopeful. The national credit of Canada has much advanced in the last twenty years, even in the last ten years (not long ago 5 per cent. had to be paid for Government loans, while two years ago money was borrowed at 3½ per cent., and this stock issued at 91 has now risen to 104), and the credit of the railways has also improved in sympathy, although not to so large an extent, but progress and development, which benefits the community as a whole, must also operate favourably upon railway receipts. As to the general effect of the railway enterprise to which I have been referring, it is sufficient to say that without it Canada could not possibly have prospered as she has done, although as already stated the country cannot yet be said to have felt anything like the full influence of the construction of the great works which the last few years have witnessed.

Manitoba and the North-West, and British Columbia, ten years ago had no railway communication, and it is only as yesterday that this necessity of modern times was extended to them. On the other hand, the western portions of the United States have been traversed by railways for forty years, and the result is that their population is numbered by millions, while owing to the inaccessibility of the Canadian prairies until recently, their inhabitants are still computed by thousands. As a rule it is only possible to get accurate statistics of the progress of Canada in the census years. A special census of Manitoba was however taken in 1886, which gives a record of the progress made since 1881. As the province only received railway communication in 1878, and as there were no extensions of importance until after 1881, a comparison of the figures enables a very good idea to be formed of the development which has taken place. The following figures will be interesting on this point:—

		1881.	1886.
Population		62,260	108,640
School attendance		6,979	17,579
Owners of land		8,742	16,351
Area of land occupied	acres	2,384,337	4,171,224
" cultivated	"	250,416	752,571
Oxen, &c.	No.	60,000	144,600
Sheep	"	6,000	16,000
Swine	"	17,282	101,490
Butter made	lbs.	1,000,000	3,500,000
Cheese "	"	19,681	74,825
Capital invested in manufactures		£276,666	£682,226
Hands employed		344	545
Value of raw material used		£384,964	£562,967
" products		£682,605	£1,079,893

These figures are all the more remarkable owing to the fact that a considerable depression and stagnation took place for a time after the inflated speculation which raged in Winnipeg in 1881-82.

But for the energy which has been displayed, these provinces must have remained isolated not only from each other and from the eastern provinces, but from Great Britain; the development of the Dominion would have been retarded; emigrants would have been obliged as they were in the past to settle under another flag;

the new markets for British products, and the new source of food supplies to Great Britain, which the western provinces are likely to prove as they become filled up with people, would have remained closed; and the alternative route to the East, the "Queen's High-"way," as it has been appropriately called, would not have become an accomplished fact. It cannot be too strongly emphasised that the Canadians have done much in a national sense towards building up the railway system by their contributions in aid of the various lines, and in the building of such railways as the Intercolonial and Canadian Pacific. Without them the country would in all probability have remained scattered and divided, as was the case before Confederation, instead of being politically and commercially united as at present.

Since confederation commerce has also progressed very rapidly, and in order to illustrate this in a general way I have prepared a statement (Appendix C) showing the total aggregate of the imports and exports from 1868 to 1886. This return, although satisfactory in itself, does not by any means give an adequate and comprehensive idea of the commercial progress of Canada in recent years. It merely shows the outside trade of the Dominion, and does not take into account either the immense strides made by the country in developing its resources, and the consequent increase of the inter-provincial trade, rendered possible by the construction of connecting railways, or the increase that is apparent in the wealth of the inhabitants. The increase of the trade from $131,027,532 to $189,675,875 in the period mentioned indicates progress, but a glance down the list shows how the figures have varied. In 1873 they were as high as $217,801,203, in 1879 as low as $153,455,682, and in 1882 reached the total of $230,339,826. Canadian trade moves in cycles as in other countries, and I have therefore divided the nineteen years into four periods, the first of four and the rest of five years, in order to arrive at a comparative yearly average for the following periods:—

	$		$
1868-71	145,142,974	1877-81	175,817,472
'72-76	200,914,189	'82-86	209,511,158

It is only fair to say that in the third period Canada was suffering from extreme depression. Besides the country has, it is truly said, been undergoing a transition within the last nine years. Although agriculture is the premier industry, and must remain so for a long time, owing to the immense areas of fertile land awaiting cultivation, it is apparent even to the superficial observer that the manufacturing industries are developing in a very marked manner.

The imports for 1885 are below divided into classes, to give an idea of the nature of the trade. Similar figures are given for the year 1875, for purposes of comparison:—

Imports by Classes (Home Consumption).

	1875.	1885.
	$	$
Manufactures of iron and steel	19,095,716	11,657,189
" metals other than iron	1,491,384	2,309,771
" silk	2,219,160	2,305,168
" cottons	9,830,836	6,241,283
" woollens	12,767,575	9,053,626
All other manufactures	21,339,991	17,258,514
Food and drink	29,042,973	18,089,941
Raw material	10,652,870	20,035,767
Coin and bullion	2,210,085	2,954,244
Miscellaneous	10,968,067	12,571,009

It will be seen that the imports of all kinds of manufactures have decreased, but it is equally a fact that the corresponding industries of the Dominion have increased in a still larger ratio. In support of this statement the importation of raw materials may be quoted. The cotton imported from 1874 to 1878, five years, aggregated 25,641,000 lbs. From 1881 to 1885 it had increased to 104,528,000 lbs., or more than quadruple that of the first period. In the same time the importation of wool increased by 15,439,124 lbs., and the exports decreased 6,627,563 lbs., or a difference comparing the two periods of 22,066,783 lbs. available for manufacturing. The importation of pig iron has more than doubled also. It is difficult to get reliable statistics relating to the manufacturing industries, excepting at the time the census is taken every decade, but the following figures serve to show the rapid advance that was made between 1871 and 1881:—

	1871.	1881.
Capital invested	$77,694,020	$165,302,623
Hands employed	187,942	254,935
Amount of yearly wages	$40,851,069	$59,429,002
Total value articles produced	$221,617,773	$309,676,068

A list of the principal industries established in Canada at the last census of 1881, with the amount of capital so invested, and the estimated yearly product, is given in Appendix D. It has been stated by successive Ministers of Finance, in making their annual statements, that the industrial development has been more marked since 1881 than in any previous period in the industrial history of

Canada. A partial investigation made in 1884 and 1885 indicated that in the older provinces there had been in 1884 over 1878 an estimated increase of 75 per cent. in the number of hands employed, in the amount of wages paid, and in the capital invested, while in the value of goods produced the increase had been 93 per cent. As also bearing upon this point I may say that in 1871 there were twenty cities and towns of 5,000 inhabitants and over with a total population of 430,043, and that in 1881 the number had advanced to 37, with a total population of 660,040, an increase of 85 per cent. and 53 per cent. respectively. The smaller towns and villages would probably show a greater comparative increase were statistics available, and I believe that the next census in 1891 will indicate a remarkable advance both in the growth of the urban and rural population. Those who saw the machinery, general hardware, wooden ware, silks, cottons, woollens, leather goods, stationery, books, boots and shoes, pianos, and articles of food and domestic use in the Canadian court at the Colonial and Indian Exhibition in 1886, will be able to form some opinion upon the industrial development of the country, although the display was not by any means so complete as it might have been made.

The development of local industries no doubt accounts for the slow, though satisfactory, progress in the outside trade, compared with the rapid increase in the population and having regard to the extent of territory available for settlement. The extension of railways, and the fact that free trade prevails amongst the various provinces of the Dominion, has no doubt caused a large increase in the interprovincial trade, which does not appear in the trade and navigation returns. Take as an instance Nova Scotia coal. In 1865, that is before the reciprocity treaty with the United States was abrogated, the total coal sold amounted to 635,586 tons, of which 465,194 were exported to the States, leaving 170,392 as consumed in the maritime provinces. In 1886 the total coal sales were 1,373,666 tons, of which 60,646 tons only went to the United States, the balance being largely consumed in Nova Scotia, New Brunswick, Quebec, Prince Edward Island, and Newfoundland. Yet in the trade returns of 1886 Nova Scotia is only shown as exporting 233,000 tons. No doubt other instances could be given with regard to many commodities of which Canada imports less than formerly. But that the Canadians as a people are increasing in wealth and have more money at their command, will be apparent from the following table; and it is stated on good authority that the imports of Canada now include more articles of a valuable nature than formerly, the cheaper lines of goods at present made in the country superseding those of a similar kind previously purchased in Great Britain and in the United States:—

		1868.	1886.
		$	$
Deposits in the chartered banks of Canada		32,808,104	103,583,950
„ savings banks		4,360,692	45,072,886
Discounts given by chartered banks of Canada		50,500,316	165,044,608
Imports		73,459,644	104,424,561
Exports		57,567,888	85,251,314
Shipping employed (not including coasting vessels)	tons	12,982,825	13,969,232
Shipping employed (coasting trade)	„	10,300,939*	16,368,274
Life insurances effected in Canada		35,680,082	171,309,688
Fire „		188,357,809	611,794,479
Business failures		12,334,000†	10,387,000
Total consumption of coal	tons	714,893	3,515,769
„ production of coal (including British Columbia, Nova Scotia, and the North West Territory)	„	623,392	2,104,179
Banking capital		30,289,048	61,841,395
Notes in circulation		8,307,079	29,200,627
Liabilities of banks		43,722,647	147,547,682
Assets of banks		77,872,257	228,422,353

* Figures only available since 1876.
† „ 1874.

The public revenue in the same time has advanced from 16*s.* 8*d.* to 28*s.* 6*d.* per head; and the net public debt from $75,728,641 to $223,174,107. The net interest payable per head has however only increased from 5*s.* 4*d.* to 6*s.* 8*d.*, which is owing to the improvement before referred to in the national credit. I am indebted for most of these figures to the returns appended to Sir Charles Tupper's budget speech last year, which is a mine of interesting and instructive information.

The exports of Canada are divided into six classes: the produce of the mine, the produce of the fisheries, the produce of the forests, animals and their products, agricultural products, and manufactures. A return of these since 1868 will be found in Appendix E. The principal countries to which goods are sent are Great Britain, the United States, Newfoundland, the West Indies, South America, and Australasia; but trade is rapidly growing with China and Japan, and France, Germany, and other European countries. It will be observed that in every class there is a fair increase; but the remarks made about the effect of the interprovincial trade apply as much to the exports as to the imports. I propose however, with your permission, to say a few words about each of the classes, as their development, and that of the industries connected with them, have such an important bearing on the future of Canada.

Minerals.—Canada is noted for the extent of its mineral deposits. The exports are chiefly coal, gold, copper, iron, phosphates, salt, antimony, mineral oils, and gypsum. Gold has been found in nearly every province, but is only worked to any extent in Nov

Scotia, Quebec, and British Columbia. Silver mines of a very rich nature are in operation in Ontario and in the Rocky Mountains. Iron ore is found all over the Dominion, and many mines are in existence and projected. Some of the Canadian iron ores are among the richest in the world. Coal is found in Nova Scotia and British Columbia, and in the North West Territories. It will be seen from the figures that the exports of the mine have nearly trebled in the last twenty years. Until the recent extension of railways it was difficult to exploit the mineral wealth or to work it, especially in the region west of Lake Huron to the Pacific. The Geological Survey Department are engaged in exploring the various parts of the Dominion, and the reports that are issued by the Government periodically, indicate that minerals of almost every kind exist, and that their development will probably constitute one of the chief sources of the wealth of the country.

The Fisheries.—These are the largest in the world, embracing nearly 5,600 miles of sea coast, in addition to inland seas, innumerable lakes, and a great number of rivers. The importance of this industry will be recognised when it is stated that it employs nearly 56,000 fishermen and 29,240 vessels and boats. The display made by Canada at the Fisheries Exhibition in London in 1883 will no doubt be remembered. There is a Minister of Marine and Fisheries, a member of the Government, who has charge of all matters pertaining to these two important industries; and it may be said that close times and other restrictions to prevent unnecessary destruction of fish are in force in Canadian waters. The products of the fisheries exported and sold on the Dominion markets in 1886 amounted to $18,679,288. This by no means represents the value of the total catch, for in Canada the home consumption is very great, 100 lbs. per inhabitant being calculated, as against 30 lbs. in England. As the fisheries extend throughout the length and breadth of the Dominion, almost every settler is afforded an opportunity for catching fish for domestic use. This renders it impossible to give full returns of the whole catch, but it is approximately estimated that the value of the home consumption last year was 13 million $, which with the exports makes up 31 million $ as the yield from less than half of the Canadian fisheries. The fresh water fisheries are also of great importance, the immense lakes and rivers supplying an abundance of fish of great commercial value, both for home consumption and export, besides providing sportsmen with some of the finest salmon and trout fishing to be found anywhere. The values of the yield of some of the principal fish in 1886 were cod, $4,553,079; herring, $2,211,498; lobsters, $2,638,394; salmon, $1,370,856; mackerel, $1,556,424; haddock, $747,685; trout, $421,400; sardines, $735,642; white fish, $434,349. Much attention has of late years been given to the development of the fisheries. The Dominion Government has granted a yearly sum of $150,000 as a bounty, to be divided according to catch among the vessels and boats engaged in the prosecution of the sea fisheries. One result has been an increase in the number and a great improvement in the build and outfit of fishing vessels. There are also twelve fish breeding establishments in different parts of the Dominion, and millions of fry are yearly hatched and placed in the rivers and lakes. The large number of men and boys employed in the fisheries form a valuable addition to the naval strength of the empire; and the canning of lobster and salmon, and the drying of other fish, principally cod, for exportation, is also a large and growing industry.

The Forest.—The forest products of Canada constitute one of her most important sources of wealth. They find their way to all parts—to the United States, to the United Kingdom, South America, and to the Australian Colonies. The Canadian saw mills are at once among the most extensive and best appointed in the world. This industry in all its stages employs large numbers of men (about 10,000 in 1881), as well as affording freight to railways and shipping. Among the varieties of trees are the maple (hard and soft), elm, hickory ironwood, pine, spruce, cedar, hemlock, walnut, oak, butter-nut, basswood, poplar, chestnut, rowan, willow, black and white birch, and many more. Serious attention is now being given to replanting, with a view to preserve and replenish where necessary the great timber districts of the country. These forest trees add a singular beauty to the landscape, and also exercise a very beneficial influence on the climate in affording shelter and attracting rainfall. The beauty and brilliancy of the tints of the Canadian forest trees in autumn are remarkable.

Animals and their produce.—The exports include live animals, meat, butter, cheese, eggs, furs, hides and skins, and wool, and form the largest item in the classification of the exports. It is a trade which has been largely the growth of recent years, and has been generally speaking a profitable one for farmers of the Dominion. In 1874 the total exports of cattle were 39,623 head, of which only 455 went to Great Britain. In 1886 the number had increased to 91,866, of which 60,549, valued at nearly a million £ sterling, were shipped to Great Britain. In addition the exports for the latter year included 16,535 horses and 359,000 sheep. There is fortunately no cattle disease in Canada, and animals coming from the Dominion are freely admitted into England, and are allowed to be moved about in the same manner as if they had been raised in the country. The cattle are of good quality, many pedigree and highly priced animals having been imported for the improvement of the flocks and herds during the last ten years. Herds of Shorthorns, Herefords, Galloways, polled Angus and Jerseys are to be found in many parts of Canada, which will bear comparison with those of any country. Great progress has been made in dairy farming, and the tendency is towards improvement and economy of labour. In connection with dairy farming the factory system is in operation in the older provinces. There are factories for the manufacture of cheese, and creameries for the manufacture of superior butter. "American" cheese as it is called is well known in England, but very few people are aware of the fact that the best "American" cheese is made in Canada. The export of Canadian cheese to the United Kingdom has largely increased within the last few years, indeed it is not long since that the Dominion was an importer. In 1868 the total exported was only 1,577,072 lbs., and in 1886 it was 78,112,917 lbs., valued at $6,754,626. The export of butter amounted to nearly 5,000,000 lbs. in 1886. Poultry to the value of $126,162, and nearly 13,000,000 dozens of eggs, were also shipped, largely to the United States.

Agricultural Products.—The exports under this head include general farm produce and fruit. There is a department of agriculture, with a member of the cabinet at its head, and legislative authority has recently been obtained for the establishment of five Government experimental farms in various parts of the Dominion, one at Ottawa, for Ontario and Quebec, one each for the maritime provinces, Manitoba, the North West Territories, and British Columbia, which are expected to prove valuable to the farming community, and I imagine the results of this new departure will be watched with much interest in Great Britain. Agriculture is still the leading industry of the country, and in 1881, according to the census returns, there were 680,000 persons so engaged. About 40 million dollars of farm produce, including animals and their products, and agricultural produce, were exported in 1886, in addition to that required for home consumption. For the quality of her cereals Canada occupies a place in the front rank, the Canadian exhibits of that class being the best at the Antwerp Exhibition, as testified by a committee of experts; and at the Colonial and Indian Exhibition in 1886, the display of grains, fruits, &c., made in the agricultural class by the Dominion attracted much attention. Mixed farming is generally carried on, the growing of grain and fruit, stock raising, and dairy farming being more or less combined. The general style of farming may not be so scientific as in Great Britain perhaps, but it is steadily improving, and the model and experimental farms will no doubt supply a stimulant in the same direction.

Manufactures.—I have already referred to manufactures in a previous part of this paper. It is only necessary to add that the principal general manufactures are not confined to any one part of

Canada, they are to be found in all the older provinces on a larger or smaller scale.

But after all that can be said, it must be admitted that Canada, compared with many other and older countries, is, so far as the development of its resources is concerned, still in its infancy, although the progress made within the last twenty years when reduced to bare facts and figures will come as a surprise to a great many people. In the future, however, it will be surprising if the advance is not more rapid than anything yet witnessed, as recent events have tended to place Canada in a position she has not hitherto occupied, and of which every advantage is certain to be taken. Besides the fact that the resources and capabilities of Canada are yearly becoming better known, must attract the attention of persons having capital to invest. There is a large field open for capitalists, and the investment of money in developing the wealth of the country is sure to be beneficial to them and advantageous to the Dominion. In this connection I may say that the Dominion Government last year obtained authority from Parliament for the establishment of a department of trade and commerce, and results of a beneficial nature are expected to follow its inauguration. In bringing this portion of my paper to a close, I may mention that the total outside trade of the Dominion amounts to \$39·57 per head, divided into imports \$21·78 per head, and exports \$17·79. This compares very favourably with the United States, whose imports are equal to \$10·84 per head, and exports \$11·59, the total being \$22·43, or in favour of Canada to the extent of \$17·14 per head.

It is impossible to speak of the future position of Canada without referring to the Canadian Pacific Railway. The idea of a transcontinental line from ocean to ocean has been mooted from time to time during the last fifty years, and I shall not attempt to say who originated it, but one of the gentlemen who interested themselves in the project, Major Carmichael Smith, in an open letter addressed to Mr. Haliburton, better known as "Sam Slick," published in 1847, made some remarks which are a monument to his farsightedness, and which condense in a few words almost everything that it is possible to say on the matter at the present day. The following is the quotation: "This great national highway from "the Atlantic to the Pacific is the great link which is required to "unite in one powerful chain the whole English race, which will "be the means of enabling vessels steaming from our magnificent "colonies, from New Zealand, Van Diemen's Land, New South "Wales, New Holland, from Borneo and the West Coast of China, "from the Sandwich Islands and a thousand other places, all "carrying the rich productions of the East, to land them at the "commencement of the West, to be forwarded and distributed "throughout our North American provinces and delivered within "thirty days at the ports in Great Britain." It was only however in 1871 that the idea took form and shape on the occasion of the entry of the province of British Columbia into the Canadian confederation. One of the conditions was that the Dominion Government should secure the construction of a railway connecting that province with the railway system of Canada within ten years from the date of the union. The first survey party for the purpose of finding a practicable route commenced work in June, 1871, and from that date the surveys were continued every year. It was soon seen however that it would be impossible to finish the line according to the original terms, and a subsequent arrangement was made by which the time was extended to 1891. Comparatively slow progress was made in the work by successive Governments until 1881, when the present company was formed, which agreed to complete an all rail route across the continent to the Pacific coast within ten years. Their part of the work was to construct the line from Callender to Port Arthur and from the Red River to Savona's Ferry, British Columbia. The Government undertook to build the lines from Port Arthur to Winnipeg and from Savona's Ferry to Port Moody, which were, with the line from Emerson to Winnipeg, connecting Manitoba with the American system of railways, to be handed over to the company when finished. I need not however repeat the various terms of the contract relating to subsidies, &c., as they are now so well known. The railway was to be completed and equipped according to the contract by the 1st May, 1891, but owing to the energy and enterprise of the company it was finished in December, 1885, nearly six years before the stipulated time, and it certainly occupies a place as one of the greatest engineering achievements of modern times. It is the shortest of the three great trans-continental highways, the distance from Montreal to Vancouver being 600 miles less than from New York to San Francisco, and the distance from Liverpool to China and Japan, *vià* the Canadian Pacific Railway, is shortened by about 1,000 miles by the use of this route. The construction of this railway and of the Intercolonial Railway has cost Canada about 24 million £ sterling, equal to an annual burden of 1 million £, and about 18 million acres of land. But the Canadians have not grumbled at accepting this responsibility. As a result of these works, Canada has been consolidated and welded together, and I have no hesitation in saying that it is the most important event which has yet happened to British North America, and one whose influence upon the future of the country it is still premature to estimate. Each province has communication with the sea board, and in consequence a great impetus must be given to the trade and commerce of the Dominion. Eastern Canada has long had railway facilities, but Manitoba, the North West, and particularly British Columbia, have until recently remained more or less isolated, and therefore practically undeveloped. This however is now a thing of the past, the railway has opened up large tracts of fertile land in Manitoba and the North West, unencumbered with timber, ready for the plough, and considered to be the largest wheat field in the world, containing over 200 millions of acres all more or less suitable for agricultural purposes, for the growing of wheat and other crops, and for the raising of cattle. This part of Canada is therefore now in a position to offer, as well as the other provinces, bright and happy homes to a large number of people, and new markets for local and British products. Railway construction is not likely to stop with the completion of the Canadian Pacific Railway, branch lines are being rapidly made in Manitoba and the North West, and others are sure to follow. But it is rather with the future results of the line from imperial and commercial points of view that I propose briefly to deal; and in this connection I may say that its terminus has already been virtually extended from Vancouver to Hong Kong. The completion of the railway has in a measure altered the natural position of Canada, because it provides her with access to the Pacific Ocean, and consequently a position in the markets of China and Japan and Australasia, in the East generally, and in South America, which she has never previously enjoyed, and which promises a new era of commercial prosperity to the Dominion. The eastern provinces are rapidly becoming manufacturing centres, and it is believed that an immense field also exists for development in this direction in British Columbia, as it possesses coal and iron close to each other, abundant stores of timber, excellent water power, and plenty of good harbours, and is nearer to the Asiatic continent than any European country or the United States. Vessels are at the present time running at regular intervals between Vancouver and Hong Kong *viâ* Yokohama, but a new, regular, and fast service will probably be established in 1889, as Her Majesty's Government have recently announced their decision to provide, in conjunction with the Canadian Government, an annual subsidy to enable a line of steamers with an average speed of 14 knots, constructed to meet Admiralty requirements, to be organised for the purpose. Without distinction of party this decision has been warmly welcomed throughout Great Britain. It is not unlikely also that before very long there will be a direct line of steamers established between British Columbia and Australasia. A portion of Her Majesty's mails for Australasia are now conveyed *viâ* New York and San Francisco, but as this contract will shortly expire, there is a very general feeling both in this country, in the Dominion, and in Australasia, that the opportunity should be taken of arranging for the conveyance of this postal matter entirely through British territory, and this would certainly require another line of fast steamers on the Pacific Ocean. This is the one link now wanted to place all the parts of the Empire in communication one with the other by means of steamers flying the Union Jack. The effect on Imperial interests in the Pacific Ocean, apart from the commercial results, of these lines of steamers, is sure to be of great importance.

There has also been much discussion lately as to the laying of a telegraph line across the Pacific, and the inauguration of closer commercial relations between Canada and Australasia which the steamship communication will bring about, will probably hasten the completion of this work. It was discussed at the Colonial Conference, and most of the delegates expressed themselves in favour of it. Indeed, there is such a general consensus of opinion in support of the proposal, that its completion must be simply a question of time.

There are many other imperial considerations connected with the Canadian Pacific route which deserve mention. It has generally been felt, and the opinion has received forcible expression during the last few months, that in time of war it would be impossible to rely upon the Suez Canal route as a regular means of communication with the East. The Cape route is no doubt a valuable one; but the difficulties of coaling on the way would, it is said, seriously impair its value not only for commercial purposes, but especially for the conveyance of troops and warlike material in time of war. None of these disadvantages can be said to apply to the Canadian Pacific route. The North Atlantic could certainly be pretty well patrolled and controlled by Great Britain, and the line from Halifax or Quebec is entirely through British territory. Then again there are abundant supplies of coal at Halifax and also at Vancouver; therefore with steamers crossing to China and Japan and to Australasia, with a speed hitherto unknown on the Pacific Ocean, we have a route as safe and secure as it is possible for any route to be, and upon which the speed can be guaranteed. Therefore the statement is justified, I think, that troops and munitions of war could be sent *viâ* Canada to China and Japan, and Australasia, more safely and probably quicker than by any other way. Besides, if Halifax and Vancouver, in anticipation of any difficulty, were made into *places d'armes*, as in the case of Malta and Cyprus in recent years, bodies of troops could be conveyed from those places to India in a comparatively short time. It is to be hoped that such contingencies may never occur, but it is very necessary in these times to bear them in mind. There has been some discussion recently and some differences of opinion upon the distances *viâ* Canada to Australasia and the East, and I have therefore prepared a table (see Appendix F) which I trust may be of some value in this connection. The distances across the Atlantic and the Pacific Oceans, as well as by the other routes, have been placed at my disposal by the Admiralty; and the distance by the Canadian Pacific Railway has been added in order to enable a thorough comparison to be made.

I might refer, did space permit, to several other matters bearing upon the past and future of Canada, and among others the canals of Canada and the shipping interests, each of which deserves a special chapter. I can only mention them very briefly, but I may say that it is now possible for large vessels to pass from the head of Lake Superior to Montreal through British waters—excepting at the Sault St. Marie lock connecting Lakes Superior and Huron—without change of cargo. The Dominion Government last year voted a million dollars towards the cost of constructing a new lock between the Lakes in question. The present lock belongs to the United States, who have always allowed Canada the use of it, but it is not large enough for the trade, and besides it is desirable that there should be a British lock connecting these two great inland seas. A very large traffic is carried on by means of the lakes in the summer season, in 1886 the tonnage of freight passing through the present canal at Sault St. Marie was 4,527,759 tons. This is almost entirely the growth of the past few years, as five years ago the total traffic amounted to only 1,500,000 tons. Of course all this traffic does not go to Canada (the tonnage of freight carried over the Canadian canals in 1886 was nearly 2,600,000 tons), but it serves to show the importance of the great lakes and canals, and the use that is made of them. The money expended on the waterways of Canada amounts altogether to nearly 10 million £ sterling. The shipping interests of Canada are also very important. The country owns a tonnage of 1,217,766, and occupies the fifth position on the list of the world's shipping. Steamers to the extent of 257,818 tons are included in the above figures. The shipping trading to and from Canada in 1886 amounted to 21,371 vessels, of 8,044,571 tons register.

In conclusion, I have only to say that the interest which is being taken in Canadian progress in Great Britain is observed with much gratification in the Dominion. Too much importance cannot be attached to the dissemination of information as to the position and resources of the colonies, and the various societies are doing so much good work in this direction, that it must be regarded as an evidence of their desire to bring about that closer union which is now so often discussed. The increase in population in Canada and the other colonies, and the consequent growth of commerce and mutual interests, must benefit both the colonies and the mother country, and add to the wealth, strength, and power of the whole Empire.

APPENDIX.

A.—*Progress of Railway Construction in Canada.**

Year	Miles in Operation.	Year.	Miles in Operation.	Year.	Miles in Operation.
1837........	16	1855........	855	1871........	2,497
'38........	16	'56........	1,296	'72........	2,508
'39........	16	'57........	1,428	'73........	2,638
'40........	16	'58........	1,654	'74........	2,642
'41........	16	'59........	1,997	'75........	4,826
'42........	16	'60........	2,087	'76........	5,157
'43........	16	'61........	2,087	'77........	5,574
'44........	16	'62........	2,110	'78........	6,143
'47........	59	'63........	2,110	'79........	6,484
'48........	59	'64........	2,145	'80........	6,891
'49........	59	'65........	2,145	'81........	7,260
'50........	71	'66........	2,150	'82........	7,530
'51........	93	'67........	2,258	'83........	8,726
'52........	212	'68........	2,269	'84........	9,658
'53........	423	'69........	2,497	'85........	10,149
'54........	657	'70........	2,497	'86........	10,697

* "Railway Statistics of Canada," issued by the Minister of Railways and Canals, 1887.

B.—*Railways in Canada in* 1867.†

Name.	Miles Constructed.	Expenditure by Government.	Expenditure from Other Sources.	Total Cost.
		$	$	$
Grand Trunk	905	15,142,633	69,092,765	84,235,398
Montreal and Champlain	83	—	2,417,680	2,417,680
Buffalo and Lake Huron	160	—	8,000,780	8,000,780
Great Western	363	2,810,500	21,966,930	24,777,430
Northern	95	2,311,667	3,146,122	5,457,789
London and Port Stanley	24	—	1,032,850	1,032,850
Cobourg and Peterboro'........	32	—	900,000	900,000
Erie and Ontario	17	—	300,000	300,000
Ottawa and Prescott	54	—	2,008,994	2,008,994
Carillon and Grenville	13	—	98,761	98,761
St. Lawrence and Industry...	12	—	54,100	54,100
Port Hope and Beaverton	56	—	1,993,580	1,993,580
Welland	25	—	1,622,843	1,622,843
Brockville and Ottawa	87	—	2,647,004	2,647,007
Swanstead, Shefford, and Chambly	43	—	1,216,000	1,216,000
St. John and Shediac	148	4,073,385	—	4,073,385
St. Andrew's and Quebec	99	110,000	2,000,000	2,110,000
St. Stephen's Branch	19	190,000	110,000	300,000
Nova Scotia	145	6,781,254	—	6,781,254
Total for all Canada	2,380	31,419,439	118,608,417	150,027,856

† "Statistical Abstract and Record of Canada," issued by the Minister of Agriculture, 1887.

C.—*Total Exports and Imports of Canada*, 1868-86.*

Year.	Total Exports.	Total Imports.	Grand Total, Imports and Exports.
	$	$	$
1868	57,567,888	73,459,644	131,027,532
'69	60,474,781	70,415,165	130,889,946
'70	73,573,490	74,814,339	148,387,829
'71	74,173,618	96,092,971	170,266,589
'72	82,639,663	111,430,527	194,070,190
'73	89,789,922	128,011,281	217,801,203
'74	89,351,928	128,213,582	217,565,510
'75	77,886,979	123,070,283	200,957,262
'76	80,966,435	93,210,346	174,176,781
'77	75,875,393	99,327,962	175,203,355
'78	79,323,667	49,081,787	172,405,454
'79	71,491,255	81,964,427	153,455,682
'80	87,911,458	86,489,747	174,401,205
'81	98,290,823	155,330,840	203,621,663
'82	102,137,203	119,419,500	221,556,703
'83	98,085,804	132,254,022	230,339,826
'84	91,406,496	116,397,043	207,803,539
'85	89,238,361	108,941,486	198,179,847
'86	85,251,314	104,424,561	189,675,875
Total	1,565,436,478	1,946,349,518	3,511,785,991

---

* The percentage of duty on the total value of goods imported dutiable and free in 1868 was 12 per cent.; in 1878 it was 13·74. In 1879 the national policy was inaugurated, and a general increase in the tariff was sanctioned by Parliament. The percentage in consequence increased in 1880 to 16·34, and in 1886 it was 18·60. Too much significance must not however be attached to these latter figures, as although some of the duties have been increased, many reductions have also been made, and many articles have been added to the free list. For instance, in 1880 the percentage of goods imported duty free was 20 per cent., while in 1886 it was 28 per cent. The amount of customs duties paid per head of population was 15*s.* 9*d.* and 18*s.* 5*d.* in the respective years.

D.—*Principal Manufactures in Canada in* 1881.†

	Invested Capital.	Yearly Product.		Invested Capital.	Yearly Product.
	$	$		$	$
Agricultural implements	3,995,782	4,405,397	Musical instruments	670,000	1,221,000
			Oil refineries	1,812,700	4,050,000
Boots and shoes	6,491,042	17,895,903	Nail and tack factories	1,245,500	1,689,450
Cabinet and furniture	3,943,419	5,471,742	Paper factories	2,237,950	2,446,700
Locomotive works	1,630,598	3,956,361	Preserving food	1,222,558	2,685,861
Cheese factories	1,021,435	5,464,454	Rolling mills	697,500	1,026,900
Cotton	3,476,500	3,760,000	Saddle and harness	1,323,845	3,233,973
Distilleries	1,303,010	1,790,800	Sash, door, and blind factories	1,996,858	4,872,362
Engine building	990,300	1,338,000			
Fittings and foundry work	9,478,808	11,548,088	Saw mills	25,487,233	38,541,752
			Shipyards	1,570,916	3,557,258
Flour mills	13,857,923	41,772,372	Sugar refineries	2,150,000	9,627,000
Furriers and hatters	1,934,862	3,352,961	Tanneries	6,386,222	15,144,535
Hosiery	630,821	1,385,730	Tin and sheet iron works	1,993,054	3,738,246
Iron smelting furnaces	2,172,100	1,197,514	Tobacco factories	1,829,420	3,060,300
Meat curing	1,450,000	4,084,133	Wool cloth	5,272,376	8,113,055

† "Census Records. 1881."

E.—*Exports of Canada*, 1868-86.*

Year.	Produce of the Mine.	Produce of the Fisheries.	Produce of the Forest.	Animals and their Products.	Agricultural Products.
	$	$	$	$	$
1868	1,446,857	3,357,510	18,262,170	6,893.167	12,871,055
'69	2,093,502	3,242,710	19,838,963	8,769,407	12,182,702
'70	2,487,038	3,608,549	20,940,434	12,138,161	13,676,619
'71 ...	3,221,461	3,994,275	22,352,286	12,608,506	9,853,924
'72	5,326,218	4,386,214	23,899,759	12,706,967	13,378,891
'73	6,471,162	4,779,277	28,586,816	14,243,017	14,995,340
'74	3,977,216	5,292,368	26,817,715	14,679,169	19,590,142
'75 ...	3,878,050	5,380.527	24,781,780	12,700,507	17,258,358
'76	3,731,827	5,500,989	20,128,064	13,517,654	21,139,665
'77	3,644,040	5,874,360	23,010,249	14,220,617	14,689,374
'78	2,816,347	6,853.975	19,511,575	14,019,857	18,008,754
'79	3,082,900	6,928,871	13,261,459	14,100,604	19,628,464
'80	2,877,351	6,579,656	16,854,507	17,607,577	22,294,328
'81	2,767,829	6,867,715	24,960,012	21,360,219	21,268,327
'82	3,013,573	7,682,079	23,991,055	20,454,759	31,035,712
'83	2,970,886	8,809,118	25,370,726	20,284,343	22,818,519
'84	3,247,092	8,591,654	25,811,157	22,946,108	12,397,843
'85	3,639,537	7,960,001	20,989,708	25,337,104	14,518,293
'86	3,951,147	6,843,388	21,034,611	22,065,433	17,652,779

Year.	Manufactures.	Miscellaneous Articles.	Coin and Bullion and Estimated Amount Short Returned at Inland Ports.	Foreign.	Total.
	$	$	$	$	$
1868	1,572,546	1,139,872	7,827,890	4,196,821	57,567,888
'69 ...	1,765,461	1,430,559	7,295,676	3,855,801	60,474,781
'70	2,133,659	1,096,732	10,964,676	6,527,622	73,573,490
'71	2,201,814	949.090	9,139,018	9,853,244	74,173,618
'72	2,397,731	848,247	6,897,454	12,798,182	82,639,663
'73	2,921,802	1,248,192	7,138,406	9,405,919	89,789,922
'74 ...	2,353,663	1,216,475	4,811,084	10,614,096	89,351,928
'75	2,293,040	1,198,631	3,258,767	7,137,319	77,886,979
'76	5,353,367	490,283	3,869,625	7,234,961	80,966,435
'77 ...	4,105,422	320,816	2,899,405	7,111,108	75,075,393
'78 ...	4,127,755	401,871	2,418,655	11,164,878	79,323,667
'79	2,700,281	386,999	3,046,033	8,355,644	71,491,255
'80	3,242,617	640,155	4,575,261	13,240,006	87,911,458
'81 ...	3,075,095	622,182	3,994,327	13,375,117	98,290,823
'82 ...	3,329,598	535,935	4,466,039	7,628,453	102,137,203
'83 ...	3,503,220	528,895	4,048,324	9,751,773	98,085,804
'84 ...	3,577,536	560,690	4,885,311	9,389,106	91,406,496
'85	3,181,501	557,374	4,975,197	8,079,646	89,238,361
'86	2,824,137	604,011	2,837,729	7,438,079	85,251,314

---

* "Statistical Abstract and Record of Canada, 1887."

F.—*Distances to Australia and the East.*

From	Viâ Suez.	Viâ Cape.	Viâ Quebec and C.P.R. and Pacific.		
	Distance.	Distance.	Total Distance.	Proportion by Sea.	Proportion by Railway.
	Miles.	Miles.	Miles.	Miles.	Miles.
London to Calcutta	7,950	11,780*	14,726*	11,671	3,055
,, Bombay	6,310	10,730*	15,566*	12,511	
,, Fremantle, W.A.	9,510	11,100	14,916	11,861	
,, Adelaide	10,760	11,950	13,606	10,551	
,, Melbourne	11,060	12,200	13,126	10,071	
,, Sydney	11,530	12,750	12,576	9,521	
,, Brisbane	11,980	13,230	12,326	9,271	
,, Auckland	12,490†	12,670†	11,876	8,821	
,, Hong Kong	9,760	13,240	11,656	8,601	
,, Yokohama	11,320	14,800	10,096	7,041	

* Distance from Vancouver to Calcutta, 9,010 miles.
,, Bombay, 9,850 ,,

† Distance to Wellington, New Zealand.

Note.—Distance England to Quebec, 2,661 miles.
25 miles per hour on land equal to 600 miles per day.
12 knots ,, at sea ,, 331 ,,
14 ,, ,, ,, ,, 387 ,,

G.—*Railways in Canada,*

Name of Railway.		Length of Line.		Total
		Completed. — (Rails Laid).	Under Construction.	Subscribed.
		Miles.	Miles.	$
Albert		51	—	1,184,500
Bay of Quinté and Navigation Company		3	—	105,000
Canada Atlantic		128	—	3,424,400
„ Southern		362	—	34,493,936
Canadian Pacific	$3,311	4,319	207	183,606,793
Montreal to Ottawa (Section Q. M.O. and O. Railway)		—	—	5,802,956
Atlantic and North-West		—	7	180,000
Manitoba South-Western Col.	165	—	—	700,000
North Shore	208	—	—	6,044,867
St. Lawrence and Ottawa	61	—	—	2,153,243
Toronto, Grey, and Bruce	188	—	—	5,678,938
Ontario and Quebec	211	—	—	11,590,000
Credit Valley	175	—	—	1,616,000
Caraquet		45	—	1,374,000
Carillon and Grenville		13	—	100,000
Central Ontario		104	—	3,170,000
Chatham Branch		9	—	176,000
Cobourg, Peterboro', and Marmora		35	—	1,158,240
Cumberland Railway and Coal Company		32	—	894,230
Eastern Extension		80	—	1,928,041
Elgin, Petitcodiac, and Havelock		27	—	584,150
Erie and Huron		72	—	833,000
Esquimalt and Nanaimo		40	30	2,531,717
Grand Southern		83	—	873,000
Grand Trunk	894	2,598	—	233,436,969
Buffalo and Lake Huron	162	—	—	7,237,639
Georgian Bay and Lake Erie	172	—	—	8,258,250
Montreal and Champlain Junction	62	—	—	1,089,987
Great Western	540	—	—	18,280,660
London and Port Stanley	24	—	—	1,121,861
Wellington, Grey, and Bruce	168	—	—	2,081,309
London, Huron, and Bruce	69	—	—	1,424,986
Brantford, Norfolk, and Port Burwell	35	—	—	30,000
Midland	166	—	—	12,874,880
Toronto and Nipissing	112	—	—	2,047,339
Grand Junction	88	—	—	445,500
Whitby, Port Perry, and Lindsay	47	—	—	317,058
Victoria (Lindsay to Haliburton)	53	—	—	498,000
Madoc Junction to Bridgewater	9	—	—	—
Great Northern		8	—	191,088
Hamilton and North Western		176	—	5,357,963

* "Railway Statistics," issued by the

30th June, **1886.***

Capital.	Government Aid.		Municipal Aid.	Total Cost of Railway and Rolling Stock.
Paid Up.	Name of Government.	Paid Up.	Paid Up.	
$		$	$	$
1,184,500	New Brunswick	455,000	70,000	1,788,356
80,000	—	—	5,000	75,439
3,318,480	Dominion .... $134,400 Ontario 270,000	818,480	—	—
34,493,936	"	147,836	322,500	27,887,717
173,146,705	Dominion	57,243,519	412,500	173,146,705
	Ontario	—	—	—
4,140,601	Dominion .... 1,440,000 Quebec .... 727,000 " 1,176,956	3,343,956	796,645	7,500,000
176,000	—	—	—	—
700,000	—	—	—	—
5,544,867	Dominion .... 954,000 Quebec 2,546,000	3,500,000	—	5,599,651
2,153,243	—	—	390,000	1,908,489
2,132,989	Dominion .... 2,656 Ontario 375,282	377,938	969,561	5,547,338
11,590,000	—	—	—	11,590,000
1,616,000	Ontario	531,000	1,085,000	—
728,462	Dominion .... 224,000 New Brunswick.... 180,000	—	—	—
100,000	—	—	—	—
970,000	Ontario	126,500	93,500	1,480,781
176,000	New Brunswick	32,000	—	176,000
1,158,240	Ontario	44,740	113,500	1,400,042
894,230	Nova Scotia	144,230	—	702,331
1,928,041	Dominion .... 1,284,496 Nova Scotia 643,545	1,928,041	—	1,928,041
584,150	Dominion .... 38,400 New Brunswick 107,500	145,900	13,000	584,150
828,500	Ontario	83,000	225,000	838,923
1,809,217	Dominion	—	—	1,809,217
844,000	New Brunswick	416,000	3,000	—
233,406,899	Dominion	15,142,633	—	245,383,344
7,237,639	—	—	966,000	6,271,639
3,258,250	Ontario	336,000	929,000	—
1,089,987	—	—	—	1,089,987
18,280,660	—	—	—	—
1,121,861	—	—	—	1,121,861
2,081,309	Ontario	241,276	682,000	2,081,309
1,424,986	"	178,630	311,500	1,424,986
30,000	—	—	—	—
12,874,880	Ontario	168,350	144,871	—
2,035,541	"	168,212	476,703	—
445,500	"	182,500	263,000	—
317,053	"	94,958	222,095	16,017,973
498,000	"	812,000	186,000	—
30,070	—	—	—	—
191,088	Dominion	25,088	6,000	—
5,255,363	Ontario	565,020	775,596	—

Minister of Railways and Canals, 1887.

G.—*Railways in Canada*,

Name of Railway.		Length of Line.		Total
		Completed. — (Rails Laid).	Under Construction.	Subscribed.
		Miles.	Miles.	$
Intercolonial		866	—	44,172,743
International		82	—	2,507,234
Irondale, Bancroft, and Ottawa		—	50	215,000
Jacques Cartier Union		—	—	20,000
Kent Northern		27	—	215,000
Kingston and Pembroke		112	—	4,413,063
Manitoba and North-Western		130	50	15,201,250
Massawippi Valley		34	—	800,000
Montreal and European Short L. (Oxford to N. Glasgow)		—	76	629,657
„ Sorel		45	—	1,566,100
„ Vermont Junction		24	—	—
Nepanee, Tamworth, and Quebec		29	—	439,011
New Brunswick	174	416	—	6,012,684
New Brunswick and Canada	127	—	—	2,580,500
St. John and Maine	92	—	—	4,110,817
Fredericton	23	—	—	1,010,000
New Brunswick and Prince Edward Island		32	5	437,400
Northern Railway of Canada	210	281	—	8,136,834
Northern and Pacific Junction	71	—	40	1,343,000
Northern and Western Railway of New Brunswick		67	40	619,000
North-Western Coal and Navigation Company		110	—	1,293,085
Nova Scotia Central		—	73	1,605,000
Nosbonsing and Nipissing		6	—	250,000
Pontiac and Pacific Junction		41	45	1,182,000
Prince Edward Island		211	—	3,735,981
Qu'Appelle, Long Lake, and Saskatchewan		23	—	201,000
Quebec and Lake St. John		82	88	3,598,295
„ Central		154	40	6,737,540
Stanstead, Shefford, and Chambly		43	—	—
South-Eastern	152	260	—	4,984,500
Montreal, Portland, and Boston	45	—	—	2,110,182
Lake Champlain and St. Lawrence Junction	63	—	—	1,409,000
St. John Bridge and Railway Extension		2	—	633,900
St. Martin's and Upham		29	—	170,665
Thousand Islands		3	—	70,000
Waterloo and Magog	39	49	—	707,000
Missisquoi Valley	10	—	—	953,000
Western Counties		67	—	2,454,694
Windsor and Annapolis	84	116	—	3,809,715
Windsor Branch	32	—	—	—
		11,526	751	690,211,345

30th June, 1886—*Contd.*

Capital.	Government Aid.		Municipal Aid.	Total Cost of Railway and Rolling Stock.
Paid Up.	Name of Government.	Paid Up.	Paid Up.	
$		$	$	$
44,172,743	Dominion	44,172,743	—	44,172,743
2,494,434	Dominion 156,800 Quebec 391,122	535,122	225,000	1,313,443
5,500	Dominion	—	—	—
20,000	—	—	—	—
135,000	New Brunswick	135,000	—	241,000
4,413,063	Dominion 48,000 Ontario 456,493	504,493	491,000	3,974,109
6,451,250	Manitoba	386,250	215,000	1,932,833
800,000	—	—	65,000	800,000
375,000	Dominion 224,000 Annuity 155,657	125,000	—	..
1,544,972	Dominion	64,972	—	1,320,000
—	—	—	—	—
439,011	Dominion	89,600	82,500	436,202
6,012,684	New Brunswick	76,000	23,000	3,677,480
2,580,500	”	575,000	47,500	3,546,000
4,110,817	”	1,180,000	60,000	2,698,589
728,200	”	230,000	80,000	728,200
211,000	Dominion 118,400 New Brunswick 108,000	—	—	—
8,136,834	Ontario	196,188	631,980	—
1,229,030	Dominion	1,206,030	—	--
401,000	” 128,000 New Brunswick 321,000	251,000	—	—
1,224,173	—	—	—	676,953
124,476	Nova Scotia	111,726	—	—
205,000	—	—	—	—
120,090	Dominion 272,000 Quebec 510,000	90,090	—	585,646
3,735,981	Dominion	3,735,981	—	3,735,981
201,000	—	—	—	151,000
1,950,360	Dominion 746,295 Quebec 1,445,000	791,518	210,842	2,334,160
6,586,682	Dominion 211,200 Quebec 681,250	741,592	103,000	6,526,340
—	—	—	—	—
4,856,392	Quebec	315,892	528,000	—
2,110,182	”	197,582	25,000	—
1,264,280	”	250,280	36,000	—
10,827	Dominion	—	—	574,853
160,665	New Brunswick	145,665	—	194,800
70,000	—	—	10,000	72,412
207,000	Quebec	92,000	15,000	—
146,343	”	43,842	38,500	—
2,454,694	Nova Scotia	729,100	250,000	—
3,809,715	”	1,089,674	—	3,902,280
—	—	—	—	—
53,376,145		144,305,147	12,599,293	—

DISCUSSION *on* MR. J. G. COLMER'S PAPER.

MR. W. LEIGH BERNARD thought that Mr Colmer deserved the best thanks of the Society for his very able and instructive paper on Canada, which had come at a very opportune time, when the affairs of that country were being taken up and discussed with a degree of interest unknown for some time past. Many persons were engaged in colonising different districts of Canada, he himself being associated with some gentlemen in colonising a portion of Alberta Province in the North-West Territory. The information to be derived from a study of Mr. Colmer's paper would be of great assistance to every one interested in the Dominion and its development. It was impossible for the public of this country to understand the merits of the different countries that were open for colonisation, unless the particulars of each country were placed before them by gentlemen like Mr. Colmer who could speak with authority on the subject. It was interesting to observe the small cost of construction of railways in Canada as compared with other countries; it seemed almost past belief that such a huge system of railways as there was in Canada could have ever been constructed for such small sums of money. When they considered that the capital sunk in the railways of Great Britain exceeded even the money invested in the national debt of the United Kingdom, it was very remarkable that a young country like Canada, with only 5 millions of population, should have such a vast railway system, and he thought it presaged very great results for the future of that country. The fact that Canada was in the eighth position of countries with regard to railways was also very important to note, and the construction of the Canadian Pacific Railway six years before the time contemplated by the contract was a fact, he thought, unknown in the history of the construction of railways. One point in connection with Canada which had not been touched upon by the author of the paper, but which appeared to him very important, was the naturalisation laws. If any one emigrated to the United States, for example, they had to wait a considerable time before they could exercise all the rights of citizens, whereas in Canada they at once enjoyed all the privileges of citizenship as much as if they had lived there all their lives. He thought that was an important fact to be known by those wishing to settle in a new country, who do not wish to leave all the land-marks of their old country behind them. It had been pointed out how in the Colonial Exhibition they had seen so many of the products of Canada, and he was sure too much had not been said of the colonial products in that exhibition. It also seemed very remarkable that a country with a small population like Canada could actually be exporting food to the United States, a country with more than ten times the population, and he was particularly struck with the figures with regard to the cheese productions; with regard to the shipping industry he was agreeably surprised to learn that Canada came fifth in the world as a maritime nation. He would have been very glad to have seen at the end of the paper some statistics comparing Canada with other countries, as regards railways in particular, and he hoped that the author would be able to add a tabular statement showing the comparison between Canada, the mother country, and other countries in that respect, though he was bound to admit that there was considerable difficulty in obtaining the information for such a table.

Sir GEORGE BADEN-POWELL, M.P., said he entirely re-echoed the remarks of the previous speaker. That the author had a complete and thorough knowledge of the subject was evident in every line of the paper. Mr. Colmer had shown them with regard to railway statistics what great advances Canada had made in giving to its national body politic the main arteries of communication. He had travelled over the continent of North America and over several other continents, and had carefully watched their railway communications, and he maintained that for the convenience of travelling, especially in winter time, there was no railway in the whole world that even approached the Canadian Pacific Railway. When travelling in various parts of the world he was in the habit of putting a thermometer on his pillow and taking a record at 11 o'clock every night. It was a very severe winter when he was last travelling in Canada, and his thermometer always registered from 50° to 55° Fahr., which was a very pleasant temperature in which to go to bed. That was an indication of the way in which they made railway travelling comfortable in winter. It was one of the great causes of Canadian growth that the population could travel during the whole of the severest winter with such great comfort. In Parliament last year a great effort was made to secure a subsidy for the trans-Pacific steamers of the Canadian route to the far East. The railway communications in Canada were of enormous importance to this empire, not only from a military but from the trade and postal points of view. Nobody expected or wished for war to break out, but if it did, there was now a sure, safe, and reliable means of communication, *viâ* Canada, with the far East, not only for mails but also for goods. Men-of-war could not go long distances without coaling, and coal was a contraband of war. In order to intercept British commerce in the North Pacific, a war vessel leaving a European country would have to travel round South America, and there was no port where a man-of-war could coal. Wherefore at Vancouver both from Canada and England there was a base of operations which should keep the North Pacific clear of all hostile aggressors. That great advantage to English commerce would not have been within their grasp had it not been for the enterprise and loyalty of the Canadians in pushing through that great railway. He need hardly say how that railway was developing Canada, because the north-west districts, and especially British Columbia, would hardly be accessible to European trade were it not for the water and railway routes which had been opened up. The Australians too by means of that route hoped to connect their industries directly with Canada. There was a large trade in canned fish, both lobster and salmon, which was almost entirely of British Columbian origin, and it was hoped by many Australians that by the opening up of the Pacific ports, the Canadians would be able to carry on that trade direct instead of it coming through San Francisco or some other American port. He thought the Society was greatly indebted to the author for supplying so much information. Table F, in the paper, showing the distances to Australia and the East was of special interest, because it showed the actual facts on which they could base any policy, especially any financial policy, they might choose to start with regard to lines for steamers and telegraphic cables. The saving in mileage *viâ* Suez in the total distance from Great Britain to the various places was enormous. But it was often forgotten that whereas the average rate of the speed of ocean mail steamers was about 15 miles an hour, the speed already attained in the trip across Canada by railway was, he believed, something like 27 or 28 miles an hour, and when the through traffic was in active operation the speed would reach an average of 30 miles. In other words, for one-third of the distance *viâ* Canada the speed was twice that possible by other routes. He maintained that whichever route they took, they would have in time by the Canadian and Pacific route the shortest distance to go, and there would be an enormous saving in time to such places as Japan and China. A previous speaker had stated that he wished there had been added to the paper Australian and other colonial statistics. He (Sir G. Baden-Powell) confessed he saw a great difficulty in making out such comparative accounts, because the conditions existing in Australia, South Africa, and South America were so different, not only one from one another, but from those existing in Canada. If such comparative tables were compiled, it would be invaluable to have details with regard to the cost of the construction of railways. As far as he knew, Canada differed from the United States in the fact that her railways had not been so liable to the peculiar financial transaction which it was said was not unknown in America. The railways had been built fairly, cleanly, and honestly, and they knew very well where the money had gone, especially in regard to the recent railway undertakings. He thought a cordial vote of thanks should be passed to the author for having given such a valuable paper to the Society; a paper which described that great imperial undertaking which had been prophetically described so long ago as 1846 as "That great link which is required to unite into one powerful country the whole English race."

Mr. F. Sharp Powell, M.P., said that if he was not out of order, he should be glad to second the vote of thanks to the author proposed by his name-sake. They must all have been impressed a few months since in London by what was then seen of the actual results of Canadian industry, and of the bounty of nature in that great Dominion, and he thought it was extremely interesting that in so short a time after seeing that exhibition they should have such a valuable paper giving the full facts and concentrated essence of that which had so recently delighted the eye. What had struck him so much in connection with Canada was the mixture of courage, enterprise, and foresight, with controlling prudence. Some colonies had at times excited the misgivings of their best friends by the rapidity of their expenditure, and there might have been a doubt whether their resources were not being overtaxed; but he had never heard such a doubt expressed with regard to Canada. Great as had been the expenditure, there had been wisdom, and there was such an enormous amount of resources that safety prevailed, and there was no danger. He thought they might in some particulars adopt the policy of their Canadian fellow citizens, for instance with regard to timber. In some parts of the world timber was being cut down in such a reckless manner that there was a danger of the forests disappearing; but he observed that in Canada great care was taken to re-plant. They had been told that in Canada there was already a department of agriculture, with a member of the cabinet at its head. That had been promised in the House of Commons the previous evening for England and Wales, but even the details of the scheme had not yet been made public property. In England they were only just thinking that the Government might do something to teach agriculture, whereas in Canada that teaching was already carried out under the administration of the great Dominion. It must be a great relief to those who occupied the crowded cities of England to know that there were such a vast number of acres of land, which in years to come would bring ample supplies of food to the teeming populations. With regard to the railroads, he thought that an English railway proprietor might well envy the fate and fortune of his Canadian brother. In England owners of railways would in all probability undergo during the next few months a sharp experience, and their policy would be sharply challenged; but he found that in Canada the railways were supported by large subsidies of money, and by large grants of fertile land. So completely had the Government and the people gone hand in hand, that although the railways had cost 135 millions of money, upwards of 100 million £ sterling had been spent out of private fortunes in order to build that gigantic system of railroads. It had been his fortune to be in Canada in 1871, and had had a conversation with Sir John Macdonald in the September of that year, at the time when the survey party spoken of in the paper had gone forth, and Sir John was speaking of what the result of that exploration might be. That great statesman said he had no doubt that the capital would be forthcoming, and his mind was in large measure at rest on that head. That railway, as they knew, had now been made. It was difficult to realise its completion at so comparatively an early a period when its shadowing forth was so recent as 1871. On the River St. Lawrence there was a rapid called La Chine. A Frenchman a hundred years ago had said that that was the true road to China, and he called it La Chine rapid; that prophecy was repeated as a joke on the steamer as he descended the rapids in 1871, but that which was a jest in 1871, was an accomplished fact at the present time; because the railway passed within a very few miles of that rapid, and its course from east to west brought China a thousand miles nearer Liverpool than any other route. As the reader of the paper had stated, vessels were running regularly between Vancouver's Island and Hong Kong; and there was no doubt that the rapidity of their ocean navigation would bridge that ocean just as the great steamers have bridged the Atlantic Ocean between Liverpool and Quebec. The sense which he entertained of the kind hospitality he had received in the Dominion, and his conviction that a great future was in store for her, made Canada the object of his affections, of his most sanguine hopes, and his largest expectations.

Mr. **James Mosse** said that as chief engineer of part of the Inter-Colonial Railway in 1860, before it was taken up by the Federal Government, he should like to make a few remarks. In the first place he wished to mention a very interesting historical fact, which probably had not come under the notice of many persons. The first idea of the Inter-Colonial Railway between Halifax and Quebec was conceived in 1825. In 1848 the Secretary of State for the Colonies sent out a party of officers of Royal Engineers, under the charge of Major Robinson, who made the preliminary survey. It was very rough, but it proved the possibility of making a railway, and it was considered an imperial more than a Canadian work. In order to avoid that terrible bend which the Ashburton Treaty allotted to the United States, instead of going through the State of Maine, it was taken round the coast of New Brunswick. That scheme for many years hung fire. In the meantime the Government of Nova Scotia made a certain portion of what was afterwards the Inter-Colonial Railway between Halifax and Truro. Of that particular portion he was afterwards chief engineer. The Government of New Brunswick then made another portion from St. John to Monckton and Shediac, which for several years ended there. Afterwards Brassey and Co. came in and made the Grand Trunk Line from Montreal to Quebec, and afterwards to River Du Loup, where it stopped, and it was not until the Dominion of Canada was established, about the year 1864, that the first survey was undertaken by the Canadian Government, under the charge of Mr. Sandford Fleming, C.M.G. Though the idea was first started in 1825, it was not commenced until about 1866, and some ten years afterwards it was completed. In contrast to the Inter-Colonial Railway, which from first to last occupied some fifty years in cogitation and construction, the expedition practised on the Canadian Pacific Railway was most extraordinary. The works on 1,910 miles of main line were commenced in May, 1881, and completed in December, 1885. The *modus operandi* displayed a remarkable amount of organisation: the engineers went ahead "locating" the railway, then came the men employed on earthwork or "grading;" these were followed by the tracklayers, that is men laying the rails, and lastly came the waggons for housing the men and for carrying provisions. The whole work proceeded *pari-passu*, and with such expedition that the rails were laid at the rate of from 2½ to 4 miles per day during the working seasons. The cost of the Inter-Colonial Railway was 8,600*l.* per mile, which he thought was about the average cost of Canadian railways. The cost of course was very much less than that in England, though it was dearer than in the United States, because the railways were better built. The Inter-Colonial Railway was as substantial a railway as any in England, with the exception that it was a single line. Everything was built in the most solid and best manner. It was not however of much use to talk about the cost of railways, because what was cheap in one country was the reverse in another. Mr. Robert Stephenson speaking in 1856 at the Institution of Civil Engineers, stated that the cost of making the Trent Valley Railway very little exceeded the parliamentary expenses incurred in obtaining the Act, but of course in the colonies such expenses were not incurred. In new countries government land was granted free of cost, and all land was cheap, the accommodation bridges were few, and the railways could be made at a comparatively less sum. It depended upon the class of railway whether it was cheap or dear. Probably one of the most expensive colonial lines that was ever built was in Ceylon, where a railway was taken for 129 miles at an elevation of 5,280 feet above the sea, at a cost of 20,000*l.* to 24,000*l.* per mile. At the present moment the Government of Ceylon owned 122 miles of railway, for which they did not owe a single penny, whilst the railway from Colombo to Kandy had paid 8, 10, and 12 per cent.

Mr. T. H. Elliott said that like most of the previous speakers he had been much impressed by the paper, which was an admirable summary of the commercial statistics of Canada. He had noticed with especial interest the remarkable extent to which Government interference appeared to be carried in Canada; in almost every direction Government aid was indicated. Mr. Colmer had referred to Government experimental farms, Government commissions of inquiry as to minerals, and especially to the very extensive Government assistance in railway matters. It would be very interesting to know to what extent they might attribute the Canadian success to this active co-operation and assistance on the part of the Government. It was to be remembered that in Canada in addition to the Government measures referred to, there was a highly protective system. If Canada had been fostered by that protective system, and if Government enterprise in different directions had really been the means of developing the country, the fact might possibly constitute a useful lesson in other directions. The report of the recent commission of inquiry as to the public works of Ireland had just been presented, and possibly a little of the same enterprise and practical Government assistance might result in the same development of that country as had been achieved in Canada. He should be glad to have some information from the author as to the relative position of Canada to the United States. At the present moment in England there was a notion that a movement was proceeding in favour of active commercial union with the United States, a movement which some feared might develop into proposals for political union with that country. He should be glad to learn Mr. Colmer's views as to the extent to which Canadian enterprise and prosperity had been affected by the relations of Canada with the United States, and especially whether those relations had in any way fettered Canadian progress. The facts contained in the paper seemed to him to supply answers to various points of inquiry, and enabled them to test the practice and actual working of economical theories. There had been great enterprise on the part of the Canadian Government, and he thought that similar enterprise in other directions might possibly lead to a similar happy result.

The CHAIRMAN (Mr. F. Hendriks) said that before calling upon the author of the paper to reply, he should like to ask a few questions with respect to railway statistics in which he did not find himself quite in accord with some of the previous speakers. He noticed that Mr. Colmer had said that the cost of 12,000 miles of Canadian railways had been about 8,500*l.* per mile. On looking at the figures however he thought they would find that the cost down to 1886 had been 12,216*l.* per mile. Of course statistically that was a very startling amount of difference; he thought however he saw how it was accounted for: in his estimate of the lower average of 8,500*l.* per mile the author had omitted to include Government and municipal aid. He submitted that that was not quite right from a statistical point of view. If the Government and the municipalities of Canada had come forward, as shown by the statistics, with $156,904,000 in aid of the railways, this had entailed so much debt and burden upon the Dominion of Canada, and consequently the outlay upon railways must be reckoned inclusive and not as exclusive of this large investment in aid of a special enterprise. The investment, it might be said, was to some extent recuperative, for it had the chance of producing in the end some interest or dividend. But this did not differ at all from the position of the expenditure of other and private shareholders, and he could not distinguish the one from the other. It had been suggested by one or two speakers that it would be useful to make comparisons with other countries. Of course in those matters they must be careful not to put together in parallels things *comparatis non comparandis*, the circumstances being so very different; at the same time he thought the author had a little challenged such a proceeding where he spoke of the capital expenditure of our London and North Western Railway, with its 1,800 miles of line having been as great as the cost of 12,000 miles in Canada. But such a comparison must be qualified by looking into facts. It was quite true that the railways in the United Kingdom had cost 43,365*l.* on an average per mile, calculated to the year 1886, as contrasted with 12,216*l.* per mile in Canada. But look at the enormous difference in the traffic and the earnings in the two countries respectively, and observe that the earnings of the railways of the United Kingdom in 1886 were in proportion to those of Canada as five to one, in other words they were nearly five times as productive in gross revenue. He would not make a comparison as to the effect upon the revenue returns arising from the number of passengers carried, although in the United Kingdom it was eighty times as great as in Canada, seeing that the British railways included so many short lines, where the frequency of short journeys told upon the comparative number of travellers. There was another point which required explanation, namely, why the working expenses continued to be so enormous in Canada. In England they were only 52 per cent., while in Canada they remained at 72½ per cent. He must confess that he did not take quite the same view as the author with reference to the history of railways in Canada, for the early chapters in that history, and particularly as regards the "Grand Trunk Railway," were certainly very distressing to the people of this country. Nor did he agree with what Mr. Elliott had said with regard to the help which Canada had received from its Government, for the real helpers of Canada at the outset of her railway enterprise were the citizens of London. And in this matter of early railway construction the capital for it would never have been forthcoming but for the faith which was too implicitly reposed at the time in some ill-constructed statistical data as to the net return to be expected from Canadian railways, and which were put forward for the information of London shareholders under the authority of Canadian representatives, and with the names on the prospectuses of eminent London financiers more or less connected with the Government agency and other interests of Canada. He did not make any imputation upon those gentlemen, for they no doubt believed at the time when the Grand Trunk Railway was started that those statistics were accurate, but they were far too sanguine in anticipating a greater increase in the value of land and extent of railway-using population than had yet taken place. If its own Government help instead of that of the public of the city of London had been waited for, the progress of Canada would never have been so great. At the same time there was some "balm in Gilead," for the trade of Canada was rapidly developed through the early construction of the Grand Trunk Railroad, and there had been some indirect return no doubt to the London commercial public from the profits of trade between the two countries. At the same time he thought it was a most flagrant illustration of the error of supposing that it ever would be good policy for colonials to be waiting upon Government to help them forward in enterprises which could best be conducted by private energy and capital. Colonials who did not help themselves, but waited for Government initiative would be nowhere in the modern race of competition. In all other results the progress of the Dominion as exemplified in the paper was most gratifying. It was one good proof of Canadian prudence that they were not overcharged with debt; because, according to the figures given by the author, the present interest per head amounted to no more than 6*s.* 8*d.*, whereas in the United Kingdom it was nearly 16*s.* Therefore, considering that the population of Canada was, on the average, a very well-conditioned one, the burden of 6*s.* 8*d.* per head was very slight. Now that the "Central Pacific Railway" was formed, and more money was wanted for it, the Canadian Government could very well afford to take their chance in that enterprise, although they were but feeble helpers indeed when the Grand Trunk Railway was being first instituted. It was gratifying too, as the sign of a well-to-do community, to see the large amount of deposits, amounting to nearly 150 million dollars, in the hands of Canadian chartered banks and savings banks. That amount however was not so large in proportion to the population of Canada as in the case of the English banks. The population of Canada might be taken as five millions—about one-seventh of the population of the United Kingdom—but the deposits in the Canadian chartered banks were not more than one twenty-seventh part of those in the United Kingdom. At the same time a fact of some importance in making such a comparison ought to be kept in view, and that was, and particularly in old countries, that a large proportion of those deposits represented idle capital. The imports and exports of Canada were very considerable for a comparatively modern community. They did not however amount in proportion to those of England to more than one-seventeenth in value for imports, and one-thirteenth for exports. With regard to life assurance, it was gratifying to see such an amount of thrift in a comparatively new colony, for the amount was about one-fifteenth of that effected in this country. He was sure the meeting would accord a hearty vote of thanks to the author for his most valuable contribution to the *Journal.*

Mr. STEPHEN BOURNE said he should be loth as an old member of the Society, and having experienced Canadian hospitality, to remain silent in not thanking the reader of the paper for the information he had put before them, and likewise in not expressing the greatest desire for the prosperity of the Canadian empire. The subject of imports and exports was rather a sore point between Mr. Colmer and himself, and they had had many passages of arms with regard to the tariff system. The small quantity of imports and exports arose from the fact that Canada instead of consuming the manufactured produce of England, as all the other colonies did to a great extent, and sending us food and raw material, exercised her capability of producing manufactured goods for herself, and therefore the intercolonial trade was larger in proportion than the foreign trade. How far the prosperity of Canada might be due to the protective system he could not say. He thought that Canada would have advanced with much more rapid strides had she not fallen into that error, and when once she awoke to the perception of the importance of free trade, especially with the mother country, she would advance with still greater rapidity. He had been asked before he came to the meeting how it came about that Canada could be so prosperous under the protective system. The explanation of that was twofold. In the first place she was constantly receiving from England a large amount of living machines, instruments for work born and raised and trained at the expense of the mother country, therefore she ought to be prosperous beyond the country which sustained the drain of producing that machinery. Again, the construction of her railways and the development of her internal resources had been, as the Chairman properly remarked, fostered in the city of London, from whence there had been sent a large amount of capital to be expended in that country, which necessarily had been productive of great prosperity for the time. The same thing had happened in New Zealand, which country was now in a considerable state of depression, almost in danger of bankruptcy, because she had obtained labour and capital beyond her means of profitably employing. They had been told that the amount of money on deposit in savings banks and life assurance offices was small, but he was not disposed to look upon that as an unfavourable symptom. He did not think they could measure the prosperity of a country by the amount of idle capital invested in savings banks and life assurance offices. He for one was not disposed to look with very great favour upon large investments in life assurance. In the long run it stood to reason that the expenditure of the individuals who insured their lives must be more than the sums they received in the end, because there was a vast amount of labour employed in the transaction and profit to those who carried it on. With regard to the railway system of Canada, of course no comparison could possibly be of any value between the cost of railways in different countries. The beauty of her railway system was that it connected the distant portions of the empire. He could not quite coincide with the encomiums passed upon the security with which Canadian railways were built: in a fifteen days' journey up to the Rocky Mountains, two days were occupied in being detained by accidents happening from insufficient construction. He did not blame the Canadians at all for that, because the railways were necessarily hastily and cheaply constructed for immediate purposes, but as they were used and became of more value, they would be strengthened and increased, and then the expense of their construction would appear very much greater than it had been hitherto. Still it was a grand enterprise, and a wonderful proof of industry, courage, daring, and foresight, which had thus bridged the continent from one ocean to the other.

Mr. J. G. Colmer, in reply, begged to thank the Chairman for the kind and flattering way in which he had referred to his paper, and the meeting for the generous reception they had accorded to it. He was also particularly grateful to those gentlemen who had taken part in the discussion for the valuable information with which they had supplemented his paper. Mr. Elliott had spoken upon the subject of the relations between Canada and the United States. With regard to that he could say that Canada was one of the most loyal portions of the British Empire. Canadians venerated the British connection, and he did not think they would do anything to bring about a separation. In a very strong opposition paper in Canada the other day, he read a remark to the effect that if a man wanted to address a meeting upon the subject of annexation to the United States, he would probably have to address empty houses; and Sir Charles Tupper had also said he was sure no man would have the least chance of being elected to the Dominion House of Commons who advocated such a policy. Here therefore was the feeling of both political parties on the matter. Canada's commercial relations with the United States had always been most friendly. They had always done their utmost to promote and foster those feelings, and he believed some good results in this direction would probably be the outcome sooner or later of the negociations which had recently been going on. Besides, in the interesting message which the President of the United States recently presented to the Congress, a disposition was shown to relax the high duties upon trade generally, and he thought that would be advantageous to the Dominion. With regard to the cost of railways, of course he did not mean in any way to make comparisons. He was only dealing with the subject from a public investment point of view; he merely said that railways in Canada cost 8,500*l.* of public money. He thought it necessary to mention that, because it was only upon that portion of money that dividends had to be paid. The Government contributions had as a rule been given absolutely, and no return was expected except in the development which must take place in the country owing to the construction of the railways. As a matter of fact he pointed out that, speaking generally, investors had only paid 8,500*l.* per mile for their railways, although they had really cost about 12,000*l.* In the case of working expenses it was difficult to make any comparison between the working expenses of colonial railways and the working expenses of British railways. Labour had to be paid at a much higher rate in the colonies than the mother country; the railways were made much more cheaply than in England, consequently a larger amount was required to be spent in maintenance, and it was also necessary to bear in mind that probably the current rate of expenses would enable a much larger traffic to be carried than was done at the present time. He mentioned in one part of his paper that the working expenses in 1877 were 81 per cent., and in 1886 they had fallen down to 72 per cent., showing that although the traffic had developed in a very marked degree during that period, the expenses instead of increasing had decreased very rapidly. With regard to the remarks of Mr. Stephen Bourne upon the tariff, he might mention that in Canada there was a practical unanimity of opinion with regard to the fiscal policy. At the recent general election both parties were united in regard to it, and both supported it. Mr. Stephen Bourne would admit that the country had made very rapid progress, notwithstanding the disadvantages under which he considered it had laboured, and that its condition was not unsatisfactory. It must be remembered that a policy which might be good for one country might not be good for another, and that local circumstances require consideration in every case of the kind. They might be certain that the interest of Canadians was not in any way to restrict trade, but rather to increase it with the mother country and other nations, and they were not likely to take any steps that would in any way diminish their present trade returns. They were very glad to get all the emigrants they could of the right classes, for they not only benefited the colonies, but also the mother country, where there were at present too many people. There could be no doubt that the development of the colonies within the past twenty years had had a wonderful effect on British trade returns, and this was largely owing to the construction of railways and to increased immigration.

MISCELLANEA.

CONTENTS:

	PAGE
I.—The Mathematical Theory of Banking. By F. Y. EDGEWORTH, Esq., M.A.	113
II.—Financial and Commercial History of 1887	127
III.—Fires in London and the Metropolitan Fire Brigade in 1887	136
IV.—The Effects of Shipping Bounties. (A translation)	141
V.—Prices of Commodities in 1886 and 1887. By A. SAUERBECK, Esq.	154
VI.—Distribution of Incomes in Germany. (A translation)	158
VII.—Unsuitable Subjects for Official Statistics	161
VIII.—The Abuse of Statistics	162
IX.—German Literature in 1886 and 1887	163
X.—English Literature in 1887	164
XI.—American Literature in 1886 and 1887	166
XII.—The World's Big Ports	167
XIII.—Notes on Economical and Statistical Works	169
XIV.—Quarterly List of Additions to the Library	186

I.—*The Mathematical Theory of Banking.*[1]

By F. Y. EDGEWORTH, Esq., M.A.

[Read before the British Association, September, 1886.]

CONTENTS:

	PAGE
Applicability of the Law of Error or Probability Curve to Banking Business	113
Its direct Application Illustrated, to determine the probability that the Notes in the hands of the public will not in the proximate future fall below a certain limit	117
To determine the probability that the drain upon the Reserve will not exceed a certain limit	122
The indirect Application of the Theory to correct certain unwarranted presumptions	123
E.g. (1) That the observed Maximum or Minimum Value of a Banking Variable, such as Notes in the hands of the public, constitute a safe superior or inferior limit	123
(2) That the Extent of the Demand which the Reserve has to provide against, tends to Increase proportionately to the Liabilities; other things being the same	124

THE higher mathematics make two contributions to Social Science: the Calculus of Probabilities, and what we may after Jevons call the Calculation of Utility. The former and more potent of these instruments is that which I attempt here to apply.

Probability is the foundation of banking. The solvency and profits of the banker depend upon the probability that he will not be called upon to meet at once more than a certain amount of his liabilities. There is involved not only the calculation of averages which is an affair of arithmetic, but also the doctrine of deviations from an average, the theory of errors, which has exercised the ablest mathematicians.

---

[1] The mathematical reader is invited to read in connection with this paper a severer study on the same subject in the *London Philosophical Magazine*, October, 1886, entitled "Problems in Probabilities;" hereinafter referred to as the companion paper.

The general rule is that, when any quantity fluctuates subject to the influence of numerous independent agencies, the different values assumed from time to time by that variable quantity occur with a respective frequency which is indicated by a well known mathematical formula, or curve. I need not detail the observations of a Quetelet or Galton. But it is important to remark that not only is the fact verified by their observations, but also it is proved deductively by the mathematical reasonings of Laplace and Poisson. Accordingly we may predicate the fulfilment of the *law of error*,[2] even in the absence of specific experience, where the conditions for its genesis exist. These conditions may be typified in the following paradigm. Take (as I have taken) fifty digits from the pages of some mathematical table: for instance the penultimate digits of fifty successive logarithms. Add together these fifty items. The aggregate will obey the law of error. That is to say, if we go on taking digits by fifties and adding them together, the various aggregates thus formed will cluster about their mean value 225, in a manner which closely conforms to the law. Now the *rationale* of this result is that each of the fifty logarithms from which we took a digit, may be regarded as it were as an independent source contributory to the grand total. The supply from each source rises and falls, not indeed by chance when considered nearly, for it is governed by a mathematical law. Yet, as the laws regulating the digits in each logarithm are[3] independent of each other, their composition is found to obey the rules of chance.

The composite volume to which each source contributes independently, sinks and swells according to the normal law of chance-fluctuation. Similarly the law of error may be predicated of the variables with which the banker is concerned, so far as their quantity depends upon a variety of agencies, the fortunes and actions of a heterogeneous public. But it may be objected that some fluctuations in banking business are known to depend, not upon a fortuitous aggregation of small causes, but upon regular and unique events, such as the quarterly payment of the dividends. It is as if in the series of composite numbers above described there occurred a break, and some terms were formed by the addition of *sixty* instead of fifty digits, or perhaps by the addition of one pretty constant considerable amount to the chance-aggregate of fifty digits. And of course, if this change in the conditions were considerable, the series so mutilated might not fluctuate according to the normal law of error. We must distinguish the undulations which have not been reduced to law from the *tides* which Jevons analysed. The normal law of fluctuation applies not so much to the ebb and flow of tides, as to the undulatory motion[4] which is relative to, superadded on, those periodic movements.

---

[2] By *law of error* I mean always the relation between frequency and deviation which is expressed by the curve $y = \frac{1}{\sqrt{\pi}c} e^{-\frac{x^2}{c^2}}$

[3] For further remarks upon the paradox that the same thing contemplated from different points of view presents the appearance now of chance, now of law, see my paper on "Chance and Law," *Hermathena*, 1884. Compare Cournot, *Essai sur le fondement des nos Connaissances*. See also De Morgan's amusing notice of the digits in the development of the constant π, *Budget of Paradoxes*.

Again it may be objected that there are other disturbances irregular indeed, yet unique and vast, and therefore not amenable to the rules of chance, such as loss of harvests by bad weather, and other great disasters both at home and abroad, adverse exchanges, and all the storms which burst upon the commercial world. I submit the following considerations in reply: (α.) Those great events themselves are known in some cases, and may be presumed in others, to obey the normal law of error. Temperature for instance, and generally Meteorology have been shown by Quetelet[5] to comply very accurately with the typical law. We may therefore roughly reason thus: The variables with which the banker is concerned—the demand for payment or accommodation and so forth—vary with the severity of commercial pressure; which varies with the destruction of harvests, which varies with the amount of bad weather; which varies according to the *law of error.* Therefore the demands upon the banker tend to vary according to the law of error. (β.) In the history of commercial crises it is usual to assign three or four[6] concurring untoward events. Now, even though the number of causes is extremely limited, still, if the causes are *independent* in the sense above explained, the fluctuation of the composite result will present many useful analogies to the law of error. If our typical series was formed by taking digits, not by fifties, but by *fives*, the result would fairly well conform to the ideal law. Suppose for example we require to know the probability that one of the terms thus formed—any sum of five digits taken at random—should be below *six* (or above *forty*). Upon the assumption that the law of error holds for the series the required probability would be estimated at $\frac{3}{1000}$, whereas it is really $\frac{5}{1000}$. A degree of precision which is quite sufficient for practical purposes; what we require being not so much a precise fraction, as the order of probability. The consilience between fact and theory would have been much closer if the limit proposed had been nearer the shown value (22·5); for example, instead of *six* (or *forty*), *sixteen* (or *thirty*). The probability that a sum of five digits will not be less than sixteen, is as estimated on the hypothesis that the law of error is fulfilled, almost identical with its real value.

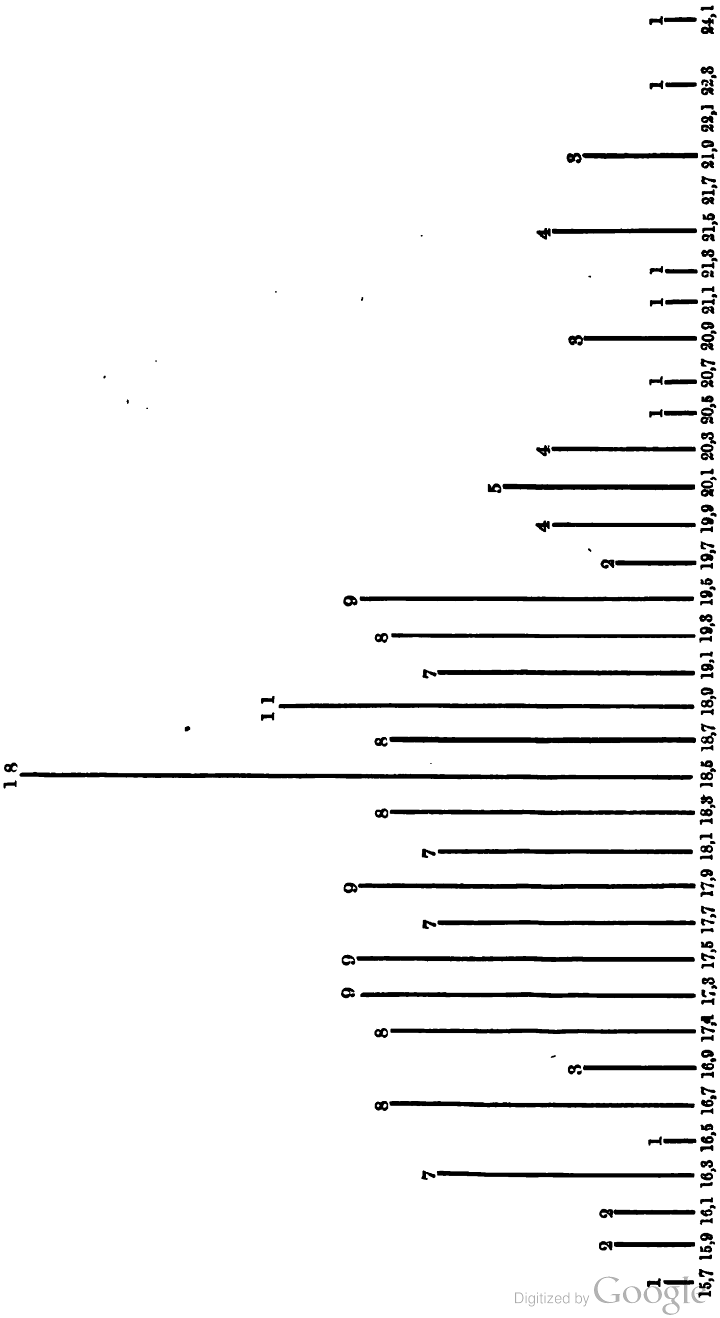
(γ.) However it is to be admitted that in banking, as in other departments, the law of error is fulfilled with various degrees of perfection. The rules of chance apply to the "many-dimpled" undulations of commercial fair weather, rather than to the solitary earthquake wave of a great crisis.

---

[4] *Cf.* below, pp. 125, 126.

[5] *Lettres sur Probabilité.* c. xiii. *Climat de Belgium, Météorologie.*

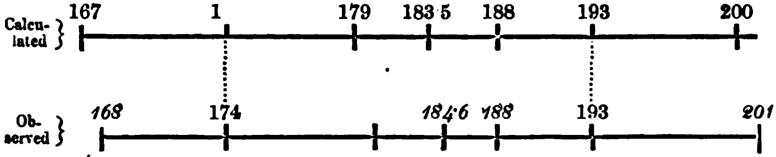
[6] See the Report of the Select Committee on Commercial Distress, 1857. Among the causes assigned were occurrences in Scotland, Ireland, and abroad, between which there seems to have been no connection.


15,7 1
15,9 2
16,1 2
16,3 7
16,5 1
16,7 8
16,9 3
17,1 8
17,3 9
17,5 9
17,7 7
17,9 9
18,1 7
18,3 8
18,5 18
18,7 8
18,9 11
19,1 7
19,3 8
19,5 9
19,7 2
19,9 4
20,1 5
20,3 4
20,5 1
20,7 1
20,9 3
21,1 1
21,3 1
21,5 4
21,7
21,0 3
22,1
22,3 1
24,1 1

(δ.) In fine I have verified the existence of the law where it was most to be expected, namely in the case of notes in the hands of the public. I take a series of returns of Bank of England notes in the hands of the public for a period which does not present much *secular* variation, such as 1826-44. The accompanying diagram represents the grouping of 173 such returns, namely 38 biennial[7] returns from 1826 to 1844, inclusive, and the[8] monthly returns from October, 1833 to September, 1844, inclusive. Each of the degrees into which the horizontal line is divided corresponds to 200,000*l.* The height of the perpendicular at any degree and the superscribed number represent the number of returns which are of the amount indicated by the degree. Take for example the fourth upright. Its length and superscription indicate that there are seven returns whose amount is somewhere between 16,200,000*l.* and 16,400,000*l.* [00,000's are omitted.]

It appears that the greatest number of returns occurs between 184 and 186. On the right of that degree are 74 returns; on the left 81. The *median* therefore is between the 184 and 186, rather nearer the former point; more exactly, if we affect a precision which is not warranted, at the point 184·6. The *quartile*, or *probable error*, is to be found by counting 43 observations ($43=\frac{1}{4}\ 173$) from the extreme right. This brings us nearly to the point 193. Again counting 43 observations from the extreme left, we reach the point 174 nearly. Hence for twice the probable error we have about 19; for the probable error 9·5; and for the modulus—which is rather more than twice the probable error—20.

So far deduction from the hypothesis that these observations conform to the law of error. We have now to show that this hypothesis is verified. The median ought to lie at a point exactly between the quartiles as above found. That point is as thus deduced 183·5; as given by observation it is 184·66. Again the "octiles," or points separating the whole series of returns into groups numbering each an eighth of the total number, ought theoretically to occur at the four points, $\pm\cdot 225$ modulus, and $\pm\cdot 813$ modulus measured from the median; that is at ± 4.5 and $\pm 16\cdot 3$ measured both ways from the median. That is the seven points which are marked on the upper of the accompanying lines ought theoretically to divide the series into eight equal groups. The seven points which actually divide the observed series into eight equal groups are marked upon the lower line.



---

[7] Appendix No. 11 to the Report of the Commission on Commercial Distress, 1857 (Parliamentary Papers, 1857, X, Part II). It is a nice question whether the first of these returns, for February, 1826, 24,100,000*l.* approximately, being of an exceptional character (see Macleod, *Theory of Banking*), ought to be added to the group. It is rather my contention that even such deviations are to be regarded as "errors" (see above, p. 115).

[8] Ibid., Appendix No. 15. For *three* of the years there are *thirteen* returns.

We here *assume* that the points 174 and 193 in the lower line are coincident with those on the upper line, and then observe five pretty close consiliences between theory and observation. It is like applying two points of a copy to the corresponding points of the original, and then finding that the remaining points in the one figure nearly coincide with the corresponding points in the other figure. The consilience is I think much closer than could be expected, when we take into account two imperfections in the statistics under consideration. In the first place the *tides*, the quarterly and annual oscillations, have not been abstracted. It is like firing at an oscillating bull's-eye. The group of shot-marks on the target, which normally fulfils the law of error, might in such a case be more or less deformed. Again the number of observations is very small, much smaller virtually than 173 the ostensible number. For, as I have[9] elsewhere pointed out, we cannot regard all these returns as independent observations, like the numbers[10] above instanced, each compounded of a distinct set of digits taken at random; but rather like the following series which is thus formed. The first term 19 is the sum of the twentieth digits of five consecutive logarithms, log. 11 to log. 15. To form the second term I dropped the first constituent digit of the first term, the twentieth of log. 11, and took on a fresh digit the twentieth of log. 16. To form the third term I dropped the twentieth digit of log. 12, and took on the twentieth of log. 17. There are thus several intercalated dependent terms between the independent ones which are italicised.

19, 19, 21, 20, 21, *14*, 10, 12, 19, 19, *25*, 26, 29, 26, 25, *18*, 23, 21, 22, 24, *24*, 19, 13, 13, 8, *11* . . . . .

Now of course 173 observations of this sort, so many of which are as it were but blurred copies of each other, cannot be expected to group themselves as perfectly as 173 distinct observations. To the best of my judgment the series in question cannot *safely* be regarded as equivalent to more than *forty* or fifty independent observations. Now it is a very nice question how far the accuracy of the Galton-Quetelet method above followed is affected by the *paucity* of the observations. In the companion paper this inaccuracy is estimated.[11] It appears that our most serious discrepancies between theory and fact—174 where there should be 175, and the difference of a unit between the values of the median as estimated in different ways—are far below what might be expected as the result of mere chance. In fact it is more likely than not that there should be an error of 1·5.

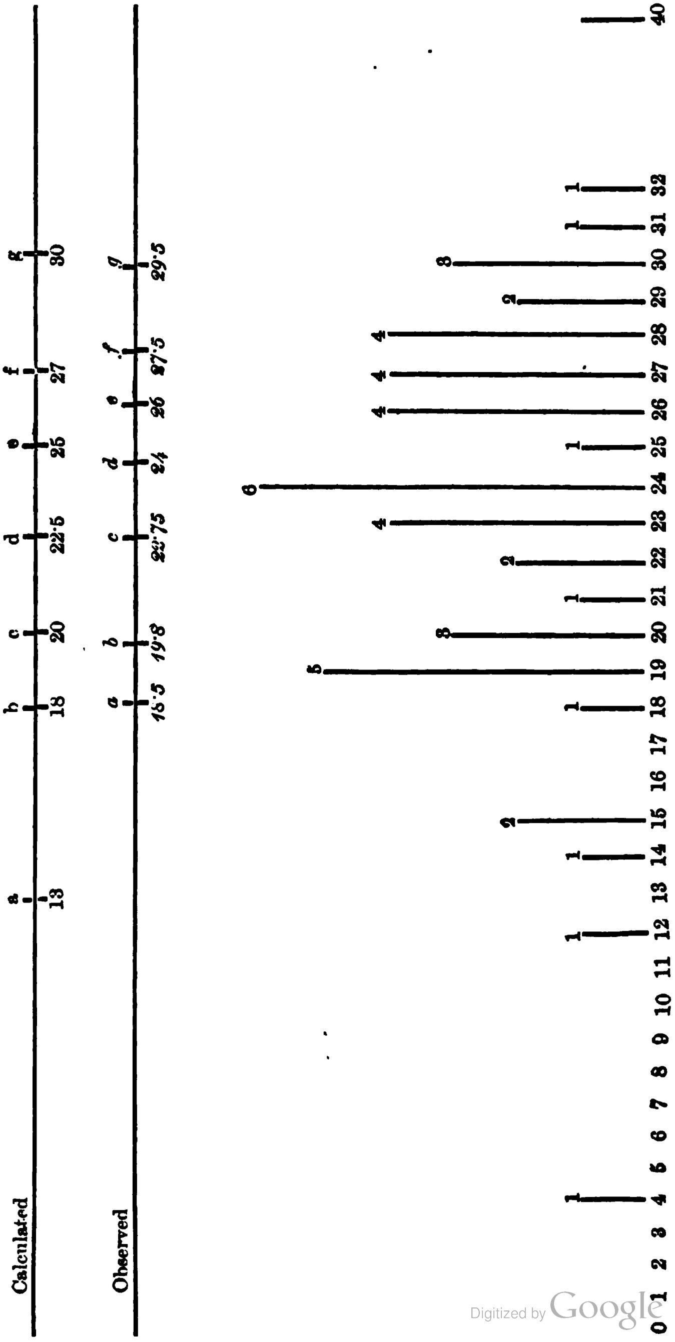
This verification will be confirmed if we observe how we should have fared in applying our tests to a case in which we know beforehand that the law of error is fulfilled with the degree of accuracy which I attribute to banking statistics. The accompanying diagram represents the grouping of forty-eight numbers, each formed by taking at random five digits and adding them together. The degrees of the horizontal line at the foot indicate the cardinal numbers; the uprights the number of corresponding observations.

---

[9] See the companion paper, Prob. I.

[10] Above, p. 114.

[11] *Philosophical Magazine*, 1886, Prob. II.


Calculated
a 13
b 18
c 20
d 22·5
e 25
f 27
g 30
Observed
a 18·5
b 19·8
c 22·75
d 24
e 26
f 27·5
g 29·5
1
1
1
2
1
5
3
1
2
4
6
1
4
4
4
2
3
1
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
40

For instance, out of the forty-eight observations or figures formed in the way described, there were two *fifteens*, five *nineteens*. The two horizontal lines at the top represent the consilience between fact and theory. The seven notches on each line correspond respectively to the median (d and *d*), the two quartiles (b *b*, f *f*), and the four octiles (a *a*, c *c*, e *e*, g *g*). In the present case, owing to our previous information about the genesis of the observations,[12] we have a right to expect *seven* consiliences where we looked for five before. It will be seen the consiliences are much less perfect in this ideal example than in the case of the bank note returns, especially when it is recollected that the modulus or *scale* for this second diagram is rather less than half that of the first: an error of 1·5 in the second corresponding to an error of at least 3 in the first. It is fair to add that this series is, I think, exceptionally abnormal; and I dare say that the bank returns between 1826-44 are exceptionally regular. I have two other groups of forty-eight quintettes (formed as above) which are less irregular. And I find that the bank note returns between 1844-60 are not so ideally perfect as those tabulated above. Alike in the case of the notes and figures, the extreme regularities are accidental, the irregularities are not greater than theory teaches us is consistent with the substantial fulfilment of the law of error.

But, it will be asked, admitting the validity of the law of error, of what use is it? I reply in a parable. I have imagined a new game of chance, which is played in this manner: each player receives a disposable fund of 100 counters, part of which he may invest in securities not immediately realisable, bearing say 5 per cent. per ten minutes; another portion of the 100 may be held at call, bearing interest at 2 per cent. per ten minutes; the remainder is kept in the hands of the player as a *reserve* against certain liabilities. The demand which he has to meet is thus regulated. From time to time, say every two minutes, there are taken a certain number, say 22, digits at random from the pages of some mathematical or statistical tables. The sum of these digits constitutes the demand which the player has to meet. We need not consider the provision which is made to meet the *average* amount (99) of this demand. The special object of the reserve above mentioned is to provide against demands which exceed that average. If the player can meet this excess of demand with his funds in hand, well; but if not he must call in part, or all, of the sum placed at call, incurring a forfeit of 10 per cent. on the amount called in. But if the demand is so great that he cannot even thus meet it, then he incurs an enormous forfeit, say 100*l.* or 1,000*l.* After each transaction the sum which each player may have paid is returned to him, so that he starts fresh as it were every two minutes. He is not allowed, let us suppose for simplicity, to add any of the interest won to the disposable fund of a 100, nor is compound interest permitted. The player who wins most interest wins the game, and is entitled to as many pence, or it may be shillings, as the number of counters which he has won.

[12] We know *à priori* that the mean is (*i.e.*, would be in the long run of figures thus generated) 22·5, and the modulus 9 nearly.

It need not be pointed out that the professor of Probabilities will have a great advantage in this game. The calculus cannot indeed, I think, by itself determine what chance of a great disaster it might be prudent to incur for the probability of a moderate gain. But the calculus can supply to common sense a datum which common sense requires but does not know how to look for; the chance that a proposed limit will not be exceeded by the sum of the digits taken at random. Since the aggregates of 22 digits fluctuate according to a probability-curve whose modulus is 19, it follows that the odds are about 100 million to 1 against the excess of the sum of the digits above their average proving greater than 75, at any one trial, that is within two minutes from any assigned epoch of the game. The odds that in a game consisting of sixty trials that limit should not be exceeded are more than a million to 1. Accordingly it would seem to me safe to risk that slight chance of a great loss against a good chance of a few shillings. Let 75 then be the amount constituting the sum held at call, together with the reserve proper, 25 having been locked up in the more profitable investments.

We have now to divide 75 so that the interest which is obtained by the portion held at call, less by the forfeits which are incurred as often as any of that portion is called in, may be a maximum. The answer to this part of the problem is that the portion held at call should be 56, the reserve 19.

It is a nice question how far this image of banking business idealises the original. Perhaps it is only the less important species of a banker's liabilities, the notes, which admits of precise calculation. Let us take as an example one of the problems which was set to the framers of the Bank Act: what was the probability in 1844 that the notes in the hands of the public would not in the proximate future fall below 14,000,000*l.*; that is 15,500,000*l.* according to the reckoning employed in the returns up to 1844; for before that epoch there was included, what was afterwards excluded, a sum[13] of 1,500,000*l.*, made up of lost notes and bank post bills.

Now it has been shown above that the returns for the period[14] 1826-44 conform very closely to one of those "probability-curves" with which Quetelet and Galton have made us so familiar. Just as the heights of Englishmen range under a curve whose central point is about 67·5 inches, and whose specific constant, or modulus, is 3·7, so the extent of Bank of England Notes-Out ranged under a curve whose mean was about 18,450,000*l.*, and whose modulus was 2,000,000*l.* Just as we may assert with confidence that the odds against the first man we meet in the street being 5 feet 2 inches are less than 100 to 1, so we might have asserted with confidence in 1844 that the odds against a proximate return of Notes Out being below 15,000,000*l.* (according to the old reckoning) were less than 100 to 1. Such, I think, was the probability on which the convertibility of the Bank of England note was staked. It seems rather a skimpy basis for so weighty an interest. But it is not my part to offer an opinion upon the advisability of sailing near the wind;[15] I only profess to determine how near they sailed in 1844.[16]

---

[13] There is some immaterial difference between the authorities both as to the items and the total of this omitted sum.

[14] The addition of the returns from 1819 to 1826 would not affect the truth of the proposition. The returns during the period of restriction would not, I suppose, much assist prediction in 1844. The same may be said of the returns before the restriction. They may, however, verify the proposition that secular change is in the direction of increase. This proposition has some bearing on our problem, but not I think very great when we confine ourselves to "the proximate future."

If a probability of the order 1 in 1,000 should appear to practical sagacity a sounder basis, then the limit 12,500,000*l.* would have been nearer the mark. At the epoch 1860 the limit 15,000,000*l.*—as deduced from the experience of the previous years—afforded a similar security. Analogous principles may be employed to solve a question which in the opinion of some is not devoid of practical interest, namely, how large an amount of uncovered Bank of England notes is it safe to issue now? But in order to obtain a serious conclusion it would be desirable to obtain statistics of bank notes[17] of different denominations up to the present date.

It is submitted that similar principles are applicable to the reserve, at least of quiet banks in ordinary times. The reserve of the Bank of England presents peculiar difficulties. For as it descends, it is subject to influences which cannot be treated as fortuitous. It is pulled up by the actions of a little knot of persons (the Governor and Directors) raising the rate of discount. It is pulled down by the panic-stricken public acting, not "independently," but like sheep. It acquires force by going. Returns so originated cannot be regarded as analogous to "errors of observation." Perhaps it would be possible to mark off a category of returns which fluctuate approximately according to the law of error. Mill in his evidence before the commission of 1857, Question 2106, distinguishes ordinary drains due to bad harvest, rise of cotton, &c., from drains due to over speculation. Perhaps the[18] former category may be regarded as roughly conforming to the law of error, and we may therefore estimate the probability of its fluctuations deviating beyond a certain extent, and fix the reserve at such a point that it would not be likely from ordinary causes to fall below what Mr. Bagehot calls the "apprehension minimum." Mill says that is easy to know the character of a drain. It is a matter of notoriety in the commercial world.[19] It is not very easy however for an outsider to break up the statistics of past years into the proper categories.

Upon the whole it may be admitted that the more important interests of banking can only indirectly be promoted by the Calculus of Probabilities. The relation of theory to practice is that of grammar[20] to the mother-tongue, of logic to science. A principal function of the mathematical organon may be to guard against mistakes to which undisciplined intelligence is prone.

---

[15] Compare the remarks at top p. 121.

[16] See the companion paper, Prob. II.

[17] In continuation of those adduced by J. B. Martin in his paper on "Bank Notes" in the *Journal of the Banker's Institute*, 1880.

[18] *Cf.* the remarks made at p. 115.

[19] *Lombard Street.*

There occur to me at least two instances in which what has appeared *primâ facie* reasonable to practical sagacity is not confirmed by theory. (1.) It appears to have been assumed by the men of 1844, that[21] because the notes in the hands of the public has never sunk below 14,000,000*l.*—for so the facts may be summarily stated—therefore they would be unlikely in the future to sink below that limit. But Mr. (afterwards Sir Charles) Wood)[22] seems quite to have been justified in expressing—in his speech upon the Bank Act—"some misgivings" about this reasoning. That organised experience of fluctuating phenomena which we call the calculus of probabilities proves that, when a quantity fluctuates under the influence of several causes, the maximum or minimum of a limited number of observations by no means constitutes a safe superior or inferior limit. If the number of observations are not more than eighty, the odds against their maximum (or minimum) being passed by the next observation are not greater than a hundred to one.[23] *A fortiori* if the number of given observations is less; as it probably[24] is in the case before us. The reader may easily test this canon in the *art of conjecturing* by the following experimentation. Take the registrar-general's returns of the proportion between male and female births for any ten or more[25] consecutive years. Run the eye down any one of the columns containing the returns for the different counties in the year selected. Abstracting Lancashire, West Riding, Herefordshire, Huntingdonshire, and Rutlandshire (as having too big or too small a population), note the largest of the remaining thirty-nine entries. It is odds that you will find that maximum considerably exceeded by some of the other columns.

(2.) The second lesson may be conveyed in a parable. A banker may be compared to a manager of a club who undertakes to supply dinner to as many members as present themselves any evening, it being understood that not all the members, nor anything like that number, are likely to attend on one and the same evening. In a club of which I have examined the statistics the mean attendance (for a certain portion of the year, during certain years) was for certain days of the week 18. The modulus or measure of fluctuation in the sense above explained was found to be about 8·5. Accordingly it might be reckoned[26] as about 100 to 1 that the excess of diners above the mean 18 would not on any evening exceed 13 (that there would not be more than 31 diners), and[27] about 400 to 1 that the excess would not exceed 17. The manager might keep provisions upon the premises up to the first limit; for the less probable category of events he might provide in some other fashion, *e.g.*, for instance—as happens, I am told—by stinting the waiters, sending some of them who usually dine upon the premises to get their dinner elsewhere. And should the very improbable occur, he might have to resort to some heroic measure—such as borrowing from neighbours.

---

[20] On the occasion when this paper was read before the British Association, the President of Section F, Mr. J. B. Martin, speaking in the capacity of a practical banker, remarked with reference to the "law of error" that he felt like Mr. Jourdain, who had been speaking prose all his life without knowing it.

[21] This account of the matter is given by witnesses before the commission of 1857 (see Question 95), and by Colonel Torrens in his *Principles, &c., of Sir Robert Peel's Bill,* whom Hankey quotes with approbation. *Cf.* the speech of Mr. (afterwards Sir Charles) Wood on the second reading of the Bank Act, 1844. Hansard, 3rd series, vol. lxxiv, p. 1367.

[22] Hansard, 1844.

[23] Companion paper, Prob. III.

[24] See above, p. 118.

[25] In view of the *secular* decrease of the ratio in question, the number of years had better not be *very* large.

Suppose now the number of members in the club to be doubled or trebled, while their habits are unaltered. At first sight it might appear that the reserve of provisions which the manager requires should increase proportionately. But the corrected theory is that the ratio of the new reserve to the old should not be two or three, but the *square root* of two or three. That is the theoretic ratio upon the supposition that the members are not determined to dine by the influence of any considerable common causes, such as in a scientific club the occurrence of scientific meetings on certain days. The general rule of fluctuation is cut into by such *tides*. In the concrete perhaps it may be said that the true coefficient would be somewhere between the extremes which would be assigned by the mere theorist and the mere practitioner, *e.g.*, between 2 and $\sqrt{2}$. But where between those limits the truth lies it would be impossible to say *à priori*. The influence of tides might be almost insensible as in the case of the ratios[28] of male to female births, or very considerable[29] as in the case of death-rates.

Let us now introduce a new modification. Supposing that the managers of several clubs, finding it inconvenient to keep a large reserve of provisions on their premises, request the manager of a large central club to keep provisions for them. He undertakes to supply on demand any evening dinners up to a certain number. It might appear at first sight that if R is the reserve of a single club (or that portion of it which is stored at the prime club) then—if n be the number of the clubs entitled each to R, and they are supposed equal and similar—$n \times R$ must be kept by the manager of the prime club in order to fulfil his contract. But this view is erroneous for two reasons: the first important, no doubt, but I think generally admitted; the second obvious only to the student of Probabilities. The first reason is that an excessive demand upon one club is apt to be partially compensated by a diminished demand upon some other club, in so far as part of the unusually large attendance at the one club is made up by members of another club invited as guests. But secondly, abstracting from the compensatory action of mutual hospitality, the reserve may with safety be less than proportionate to the number of clubs, in so far as the members are not determined to dine by one and the same cause, but have heterogeneous engagements. Suppose that in virtue of the first consideration the necessary average reserve is reduced from R to R^1; and for simplicity let the prime club be twice as large as, but in other respects similar to, the others. Then the total reserve which must be kept by the prime club in order to meet (the possible excess of) its liabilities is not $(n + 2) \times R^1$, but the *square root* of $(n + 2) \times R^1$. In estimating the security of the system it would be quite erroneous to deduct $n \times R^1$, the whole amount for which the prime club is liable to its neighbours, from the reserve kept by the prime club, and then to be alarmed if the difference were small or even less than nothing. The theoretical presumption is that the difference ought be less than nothing.

---

[26] With the aid of the proper tables.

[27] Supposing the *law of error* to be exactly fulfilled, which in the case of such small numbers is hardly to be expected. The manager would have to content himself with the general idea afforded by the theory.

[28] "Methods of Statistics," *Journal of the Statistical Society*, Jubilee volume, pp. 201 and 202.

[29] "On Methods of Ascertaining Rates, &c.," *Journal of the Statistical Society*, December, 1885.

Need I explain the parable? Because the liabilities of the Bank of England doubled between 1844 and 1873, while the reserve increased only in a smaller ratio, that circumstance *per se* is not calculated to cause alarm. Whatever other arguments there are in favour of a larger reserve do not become *à fortiori* on that account. But the proposition that the demands which a bank has to meet do not increase in proportion to the liabilities must be stated and applied with caution. It is true only of drains which are made up of a number of *independent* tributaries. It would not be true of autumnal drains due to regular causes. Suppose that in consequence of harvest operations or other periodical causes there is an autumnal drain of a million pounds upon the reserve of a bank. If we could conceive the business of the bank to be doubled, other things being undisturbed, there is every reason to suppose that *that* drain would be doubled. What would not be doubled is the margin of reserve which a prudent banker must keep in order to meet the possible excess of demands made upon him above the average of such demands. In our ideally doubled bank the autumnal average will be doubled, but the fortuitous excess above that average will not be doubled.

The nice relations between chance and law may receive additional illustration from the statistics of other human interest at least as complicated as business—poetry; or not poetry, but *disjecti membra poetæ*, I should perhaps say, in reference to the Virgilian statistics which I presented to this Society last year.[30] Take at random from the Æneid 100 feet exclusive of fifth and six feet. You might take a foot from each one of 100 consecutive lines; thus, one of the first four feet from the first line, one from the second, and so on. Which of the four feet you are to take on each occasion must be determined[31] in some random fashion.

---

[30] See "Methods of Ascertaining Rates," *Journal of the Statistical Society*, 1885.

[31] *E.g.*, tossing two unlike coins, and if *head head* turns up, taking the first foot, if *head tail* the second foot, if *tail head* the third foot, and if *tail tail* the fourth foot.

Well then, the average number of dactyls in the 100 feet thus taken will be 40. And the excess above that average which is[32] very unlikely to be overstepped is 18. If we could conceive[33] any practical purpose depending upon a provision for the possible number of dactyls in a 100 feet, it would be safe enough to act upon the theorem just enunciated.

Let us now take 200 feet in the same way as before 100. The excess above the average which will now afford the same safety, as 12 before is not now $2\times12=24$, as common sense would probably take for granted, but $\sqrt{2}\times12=17$. Which proposition the reader will please to remember is not merely a deduction from theory, but also fairly well verified by actual observation.

The proposition must however be stated carefully. Suppose we took a foot not indiscriminately from any of the first four places, but always from the first place. We should then have in a 100 feet a much higher average of dactyls; the first foot being more frequently a dactyl than the others. The excess of the new average over the old will be about 14. Now *this* excess *will* be doubled when we take 200 instead of a 100 lines. What is not doubled when we double the number of feet examined, is the chance-deviation in excess of the average—whether the average for lines in general or for[34] a particular category.

It will be found I think that the practical banker and generally-educated man will much less readily admit our general rule than the exception. So much more familiar is the conception of law than chance.

Similar principles govern the theory of bankers' balances. Indeed it is difficult to understand[35] upon what theory of banking such balances are placed in so wholly different a category from the accounts of individuals that it is thought proper in estimating the sufficiency of the reserve to deduct from it *en bloc* the whole amount for which the depositing bankers have a claim. Ideally at any rate—in the planet Saturn—if n banks become co-ordinated by keeping their reserve in one prime bank, the reserve which is now required to meet their liabilities tends to be less than n times the previous average reserve for two reasons. First, in so far as payments by one bank are payments to another, cancellation may be substituted for cash payments. But, secondly, the reserve is reducible, not only in virtue of this interdependence of the banks, but also in virtue of their independence: so far as the transactions of one bank are entirely disconnected from the transactions of another. Suppose for instance that their transactions with the foreigner relate to different regions of the planet. But again this general principle is cut into, in so far as their transactions are *not* independent; as if there occurred a large common drain owing to some great disaster.

---

[32] Say thousands to one against such an event.

[33] As if, in printing Latin verses, with the "longs" and "shorts" marked, it were requisite to deal out to different printers the number of each sort of type which might be required for 100 Virgilian hexameters.

[34] The *absolute* value of the limit need not be the same for the category and the whole class. It is, *e.g.*, greater for first feet than for feet in general in about the ratio 4 : 3; say, for 100, first feet 24, and for 200 $\sqrt{2}\times24$.

[35] See the weighty remarks of Mr. R. Biddulph Martin in the *Journal of the Banker's Institute,* 1885, p. 334.

Of course it is only in Saturn that such complicated relations could be disentangled. These speculations are at an immense height of abstraction above the affairs of earth. Appropriate general conceptions, rather than exact propositions, have been the object of the writer. He does not pretend. to base any practical recommendations upon the theory. There is some sense as well as absurdity in the sentiment which Thomas Peacock in his amusing *Nightmare Abbey*, puts into the mouth of Mr. Flosky, the caricature of Coleridge. The philosopher having been consulted in a practical emergency, replies: "Madam, I should lose my transcendental reputation, if it could be said of Ferdinando Flosky that he was ever known to give any useful information to any one." The theorist must not pretend to wisdom, if he knows so little what he is about as to mistake his abstract formulæ for rules immediately applicable to practice.

II.—*Financial and Commercial History of* 1887.

THE following is taken from the Supplement to the *Statist* of the 11th February, 1888, in continuation of similar extracts for previous years, commencing with the year 1878:—

"Writing a year ago on the position of affairs at the close of 1886 we observed that, although undoubtedly the year had been one of depression, it seemed to have marked a turning point. Unquestionably at the close of 1886 a much more cheerful tone prevailed than had been the case at any time previously in the twelve months; but, unfortunately, early in 1887, and intermittently since, political alarm on the continent has completely set back the improvement which was expected, and not until the close of 1887 were there really distinct signs of a better state of business. It is to be regretted, however, that much of the improvement which has taken place in the latter part of 1887 has been due rather to speculation of a dangerous character than to solid legitimate expansion of trade. The principal feature during the early months was the rise in the price of tin, brought about by a strong combination formed on the continent to carry up quotations, partly because of the statistical position and partly in consequence of rash adverse speculations on the part of some of the London operators. The success which attended the 'corner' in tin led to the formation of another speculative syndicate for the purpose of controlling the copper market and the market for copper mining shares. The rise from about 100*l.* to over 160*l.* in the price of tin, and of over 100 per cent. in the price of copper, stimulated a speculative inquiry for other metals, and the movement extended to the produce markets, and for a short time there was all the appearance of an important if not sustained advance. One prominent reason why so many persons were inclined to enter into the speculation was that during the long continued period of falling prices, which had lasted for several years, manufacturers and consumers had got into the habit of working with very low stocks, and when the syndicates commenced their operations the statistical position was all in their favour. This was especially the case in all commodities of an imperishable nature, such as metals—not including iron.

"Apart from the special influence of the rise, which only became really appreciable quite at the close of the year, it may be noticed that for fully six months the volume of export trade compared with that of the first half of 1886 showed an increase of under 1 million £, or less than 1 per cent. Part of this poor result may be due to the considerable shrinkage in trade during June, when everybody was holiday making in connection with the jubilee celebrations. In the second half of the year, however, there was a decided turn for the better. Out of the total increase of about 9 million £ in exports in the twelve months, the last two months showed a gain of over 4¾ million £, the percentage gain of December being quite phenomenal, reaching nearly 19 per cent. Undoubtedly a large proportion of the gain, especially in the latter part of the year, was due to the increased value of the raw materials used in the manufactures exported, and looking ahead it may be expected that the increase will continue, as in several important instances prices are appreciably higher than for the periods against which they compare.

"One unpleasant feature in connection with our shipments of manufactures abroad has been the falling off in trade with our Australasian colonies. In all probability, the shrinkage which occurred was due to the impoverishment of the settlers after the years of drought which they had experienced. The outlook of the future is very much changed, and there is the probability of considerable increase of business. There has been a decided expansion in business with our South African colonies, where a much better state of trade prevails, and appears likely to continue. A very large proportion of the total increase in exports of the year is due to the increasing business we have done with the United States, which have been obliged, notwithstanding their own great productive power, to buy large quantities of material required for railway construction, as a consequence of the building of some 20,000 miles of railroad in about eighteen months.

"With respect to the import trade, at first glance the increase of over 7 million £ in duty free food—that is, chiefly in the form of cereals—may appear an unsatisfactory feature; but it is not seriously so when account is taken of the fact that 1886, compared with 1885, showed an increase of over 14¼ million £, so that the imports of food in 1887 are approximately 7 million £ less than they were in the year 1885. It is noticeable, too, in the imports that the arrivals of raw materials for textile manufactures showed an increase of approximately over 5½ million £ to be added to the increase in 1886 over 1885 of nearly 2 million £. On the other hand, imports of other raw materials for sundry industries and manufactures have been shrinking. In 1886, compared with 1885,

Google

there was a decrease of nearly 3¼ million £, and in 1887, compared with 1886, a further decrease of a million and a quarter. Price movements must be taken in connection with these figures, and for these we must refer our readers to the appendix. It will be found that cotton averaged about 5½*d.* per pound, or 10 per cent. higher than in 1886. The level of the price of wool was also slightly above that for 1886, but only slightly so. The import tables show that a very large proportion of the increase in food imports came at a time when wheat was at a remarkably low level of price, and, indeed, the quotation of wheat in the last quarter of the year was at a lower level than in the present generation, the average *Gazette* price having touched 28*s.* 5*d.*, or a lower quotation, indeed, than in the present century.

"Another evidence confirmatory of the favourable inferences to be drawn from recent Board of Trade statements has been the movement of home railway traffics. For eight out of the twelve months the goods traffics of seventeen of the principal British railways, whose increases and decreases will be found set out in our appendix week by week, showed irregular results. At the opening of trade in the spring there was a little evidence of expansion of business; but it was followed by a falling off during June, July, and August. Then, however, decidedly better results were secured by the leading roads, and for the last four months of the year the goods traffics showed a marked expansion. In the aggregate the first half year showed an increase of 192,000*l.* with total goods receipts of about 16,400,000*l.*, and in the second half year, despite the falling off at the beginning of the six months, the aggregate increase was over 400,000*l.*, with a total goods receipts of about 17,750,000*l.* The passenger receipts do not show corresponding movements. In the first half there was a gain over 1886 of 185,000*l.*, with total receipts of nearly 12 million £; in the second half there was a shrinkage of nearly 60,000*l.*, with total receipts of a little under 15 million £. The inference to be derived from the detailed figures is that, accident apart, there should be better results for some months ahead than was the case in the early part of 1887. This is, of course, speaking broadly. The railway companies, however, have, in the past and will possibly have still more in the future, to take note of the popular demand for reductions of rates and the adoption of some policy which will satisfy public opinion with respect to foreign goods being carried at a cheaper tariff than home products.

"In most of the manufacturing industries the tone of brokers and others who have reported upon the state of trade has been fairly cheerful, though there is a singular unanimity amongst them in depreciating the influence of politics on trade, business having been greatly checked by considerations as to whether or not there would be a conflict on the continent. The industry, however, which is really the backbone of the country's prosperity is still in a very deplorable state, and the difficulties of farmers have only been partially surmounted by the assistance afforded by landlords in reductions of rents. Compared with 1886, there was nearly 1½ per cent. less land under wheat cultivation in Great Britain, and about 7 per cent. less under barley, and the live stock figures of the year were considerably below the figures of 1885 in all cases. The decrease in live stock, compared with 1885, was nearly 2½ per cent., sheep and lambs 2¼ per cent., and pigs over 4¼ per cent. The winter of 1886-87 was an unusually severe one, and very costly to farmers, who had to maintain stock at great expense; and although a dry summer resulted in the gathering of satisfactory cereal crops, the low level of prices obtained neutralised the benefits from the increased yield. It will be observed from the diagram of price movements given in the appendix that year by year since 1881 prices have been sinking. The *Gazette* average price of 1881 and 1882 exceeded 45*s.* per quarter, to contrast with the average of 31*s.* in 1886 and 32*s.* 6*d.* in 1887. The higher average in 1887 over 1886 was due to the level of prices being appreciably above that of the previous year for quite six months; but towards the close of the year there was a sudden fall from over 36*s.* per quarter till, at the close of September, the average was within a few pence of 28*s.* per quarter. The fall was doubtless due to the very good harvest of wheat, which was above an average as to quantity, and of very good quality. The depression in our agricultural industry is causing great distress among the labouring community, who, finding themselves unable to subsist in the country, are crowding into towns, and, in consequence, the complaints of absence of employment have been loud and bitter. Looking abroad we have the fact that the American maize crop was a very poor one. Sir James Caird, in a communication to the press, called attention to the reduction of crop caused by the drought, being reckoned by the United States Agricultural Department at upwards of 43 million quarters. '*This loss is 3 million quarters greater than last year's produce of all cereals in the United Kingdom.* It is a loss of food many times greater than that of any Indian famine in recent times.' The effect of this heavy deficiency of the Indian corn crop will be to leave little for export from the United States if the average home consumption is maintained. The price in that country will probably rise considerably, and the cost of feeding all animals through the winter there will be largely increased; and this can hardly fail to stiffen the price of all other kinds of food products in that country and this.

" *The Cotton Trade.*

"In cotton piece goods the exports during 1887 were unprecedentedly large, and notwithstanding the fact that in 1886 as compared with 1885 there was an increase of nearly 11 per cent., the increase in 1887 over 1886 was a further 1 per cent. Business with the East Indies shows a falling off, but this was nearly counterbalanced by increased trade with China, Japan, Java, &c.; and the shipments of piece goods to continental Europe—447¼ million yards—were just 53 million yards more than in 1886, and over 50 million yards in excess of the exports in 1885. There was also a substantial increase in the shipments to African, South American, and West Indian centres. On the other hand the exports of yarn were smaller, the shrinkage being especially observable in business with the East Indies. In the *Statist* of 5th November, p. 111, we gave some statistics of the competition of Bombay with Manchester. The development of Indian production of late years has been going on at a very rapid pace. In 1876 Bombay had 47 mills, with about 1,100,000 spindles and 9,000 looms; in 1886-87 the number of mills had exactly doubled, being 94, the number of spindles had more than doubled, being 2,261,000, and there was an increase of nearly the like extent in the number of looms, which were approximately 17,500. As to the development of the export trade from India, it may be mentioned that in 1876 India exported less than 8 million lbs. of yarn, and year by year since there has been a steady increase until in 1886-87 the exports reached nearly 92 million lbs. Piece goods shipped from India were about 15½ million yards in 1876, and increased to nearly 53½ million yards in 1886-87. Summed up in another way, the value of the yarns and piece goods together exported from India in 1876 were less than ¾ million £ sterling in contrast with nearly 4¼ million £ sterling in 1886-87. The competition of India with Lancashire is growing really alarming, and as we show above is rapidly increasing. Many advantages are secured by Bombay. India is the field of production of raw cotton, and has superabundant labour. The Bombay mills are so close to the Eastern markets that not only has India the advantage over Lancashire of saving cost of freight on raw cotton, but also has a smaller cost in getting manufactured goods to the consumer. In some qualities of goods there is, therefore, the outlook of India taking away yet more of our home trade.

" *The Woollen Trade.*

"The principal feature of the year 1886, undoubtedly, was the spurt in the price of wool, which materially improved the position of our colonial producers. During the past year there has been no further sustained improvement; but a fair business has been done at the higher level of values. At the first sales of the year it looked as if values were again going to be higher; but later on markets dragged, partly in consequence of consumers having laid in large stocks in anticipation of any further advance in values. The change of fashion which has been going on for the past few years has undoubtedly been beneficial to this special industry, as a reference to the statistics given by Messrs. Helmuth, Schwartz and Co.—the main figures of which are given in our tabular appendix—shows that the total import into Europe and America of colonial wool was unprecedentedly large. In round figures the total imports of the year were 1,444,000 bales; but the influence of the continued fall in prices which has taken place between the years 1872 and 1887 may best be gathered from the fact that with nearly double the quantity in 1887 over 1882, the total value was 20,216,000*l.*, in contrast with 19,690,000*l.* The average value per bale for the 743,000 bales in 1872 was 26*l.* 10*s.*, to contrast with 14*l.*, the average value in 1887. Complaints are very general that business was so much interfered with in consequence of political apprehension on the continent; but looking to the future, the position is regarded as satisfactory provided that peace be maintained, inasmuch as it is stated that stocks have been largely reduced, and consumption is expanding.

" *The Iron and Metal Trades.*

" At the beginning of the year a stimulus was given to markets for iron and steel, in consequence of the receipts of large orders from the United States, where the capacity of production was for a time below the requirements of the country. That this was so was almost entirely due to the activity of railway construction, as in the United States between the 1st July, 1886, and the end of 1887, it is estimated that some 20,000 miles of railroad were built, and the expenditure on railway construction during 1887 for main line alone was estimated at approximately 60 million £; but consequent on the demand for iron and steel manufactures, great additions have been made to the capacity of production in the United States itself, with the result that whereas in 1877 the United States produced 2,100,000 tons in contrast with 6,600,000 tons of pig iron in the United Kingdom, in 1887 the production in the United States was 6,250,000, or only a million tons below the production of the United Kingdom. The change which has been effected will best be gathered from the following figures, showing the production of pig iron in the United Kingdom and the United States in contrast for the years 1877, 1882, 1887:—

	United Kingdom.	United States.
	Tons.	Tons.
1877	6,600,000	2,100,000
'82	8,500,000	4,600,000
'87	7,250,000	6,250,000

The pace at which railroad construction was going on in the United States was too fast to last, and in consequence of the apprehensions of monetary stringency in the autumn, capitalists were found unwilling to encourage some of the more venturesome companies in their policy of extending their lines. The result of this change was that orders for material began to fall off, and prices of iron gradually declined during the latter part of the year, recovering quite at the close in consequence of the revival in speculative feeling fostered by the phenomenal success of speculations in other metals. Towards the close of the year there was also a fresh impetus given to business by the extension of shipbuilding; but it is a noticeable feature that iron in the construction of ships is quite going out of fashion, and it is estimated that some 80 per cent. of the new ships built or in construction at the end of 1887 are of steel. As an indication of the expansion in production of steel, it may be of interest to refer to some statistics. The output of basic steel in Great Britain and continental centres for the twelve months ended 31st October, 1887, in contrast with the corresponding period of the previous twelve months was 1,702,000 tons, against 1,313,000 tons. Looking to the future, the outlook of the iron and steel trade on the whole is not pleasant for this country, and the only bright spot on the horizon is the greater activity in the shipbuilding industry. With decreasing consumption in the United States it is improbable, unless there are some very drastic changes in American customs tariffs, that Great Britain will be able to secure any appreciable volume of American business, especially with the fact that consumption in the United States, after the activity of the last year or two, shows signs of falling off, at the same time that the capacity of production has enormously increased. Production of iron in this country has been kept down by agreements amongst the ironmasters in both the Scotch and Cleveland districts. Nevertheless, we have the fact that the stocks of iron have been added to in the course of the year. Scotch stocks, with a slight falling off in 1883 compared with 1882, have for the last ten or eleven years been steadily accumulating, and the quantity in public stores is approximately five times as large as it was ten years ago. We have already referred to the movements in prices of copper and tin, which have shown such a phenomenal advance, rising in a few weeks to higher prices than have been touched for several years past. Spelter, which is largely used in connection with our exports of iron goods to the colonies, has also risen appreciably, the price having been within a little of 22*l.* per ton, in contrast with about 14*l.* per ton at the beginning of the year. There was a sharp run up in the price of lead towards the end of the year, the rise being equal to about 40 per cent. The danger to the metal markets, the prices in which have moved so violently, is that a great deal of the speculation is on account of persons who have no legitimate business whatever in the markets which they have operated in. If a consumer foresees the probability of the statistical position leading to an advance in prices, and provides himself against future contingencies by laying in stock, and by so doing causes a rise, such a movement would be neither violent nor fictitious; but if a capitalist, having money loose for a short time, enters into transactions on the idea of securing a snap profit by selling at a higher price than he has bought at, the market becomes altogether disorganised, and the legitimate trader does not know how to act. Consequently abnormal fluctuations through the throwing into the market of money for temporary use in speculative transactions really, and occasionally very seriously, injures trade. On the other hand, it must not be forgotten that the rise which has taken place in some of the raw materials used in the manufactures will have a beneficial effect on business, inasmuch as it will enable producers in foreign countries to send us larger orders for manufactures, as they will have more money to spend in consequence of the rise.

" *The Money Market and Prices.*

" The trade of 1887 has been conducted under circumstances of a distinctly higher level for money than was the case in 1886. The average open market rate for three months' bills was for the year approximately 2⅝ per cent. per annum, to contrast with but a trifle over 2 per cent. in both 1886 and 1885, and it is noticeable that the margin of difference between the open market rate of discount and the official bank minimum rate has been a very wide one. The tendency during the last few years has been for the great joint stock banks of the country to work more and more independently of the Bank of England, and a great deal of money which used to be retained in the country is now sent up to London for employment. Besides this, during the year considerable sums have been employed in London on account of foreign capitalists, as rates in this country have been appreciably above those current on the continent, and the political uncertainties of the times have led to the temporary employment of foreign money in this country, both in the shape of discounts and in temporary Stock Exchange investments. The bullion in the Bank of England was but a trifle more at the end of the year than it stood at the beginning, and the amount in the last week in December was practically the same as in the first week of 1886. On the continent there has been a very different state of affairs. At the end of 1886 the Bank of Germany held approximately 33½ millions of cash, and had added about 5 millions to its stock during 1887; but while the Bank of Germany has been building up its cash resources, the Bank of France has lost strength, the amount of gold held at the end of 1887 being but a trifle over 44½ millions, or 5 millions less than at the end of 1886; and the New York associated banks held in cash about 14¼ millions, showing a decrease compared with the year previously of about a million and a quarter sterling. The shrinkage of the resources of the New York banks was, however, to some extent due to the larger amount of cash resources held in the other great centres of the United States. Hopes have been excited of a material increase in the production of gold in the world, and one of the features of the year—indeed, of the last five or six years—has been the development of the gold mining industry. In this connection great disappointment has been felt at the absence of the expected increase in the gold production of India, and there would appear to be some amount of undue expectation of the production of gold in South Africa. Still, taking all the various countries which are being exploited for gold, there are indications of a considerable increase in production.

"At the close of the year there was an idea that the rise in prices of produce we import from the East would lead to a sympathetic move in the value of silver, but to the present the movement has been slight, and being due mainly to speculation, has not been sustained.

"The better class descriptions of Stock Exchange securities show a very large gain in market estimation. Amongst the reasons for the rise which has taken place in the prices of investment securities have been the small creations of new high class securities, at the same time that there has been an increased demand for such forms of investment. Undoubtedly, the savings of the country have been on a greater scale than the creations of new capital. The colonial Government issues of the year have been few and unimportant, and foreign Governments, except in the case of one or two South American States, have not borrowed in this country at all during

1887. There have been issues of capital, but the money has been raised on the continent. With the maintenance of peace there may be a continuance of the rise in prices; but it must be recognised that values in a great many cases are at a point which admits of very little further advance; and in case of a conflict on the continent and the creation of new State loans there would have to be important readjustments of value. Home Government funds touched higher prices than at any time during the present century, and the position of the market is such as to lead to the expectation that with the maintenance of peace a conversion of the British debt will be witnessed in 1888. But while securities having a fixed rate of interest have appreciated in value so considerably, it is noticeable that the value of real estate has decidedly diminished in the estimation of investors. Indeed, the Chairman of the London and County Bank—no mean authority with all the resources at his command for securing information—asserts that there has been a depreciation within the last ten years of about 10*l.* per acre, and the significance of this statement will be gathered when it is recognised that there are 48 millions of acres of land under cultivation in Great Britain and Ireland.

"Both as regards the past year and with respect to the future, account will have to be taken of the change which has taken place in the manner of conducting business. The old form of personal contact between traders and their *employés* and customers is fast disappearing, and in place of it we have the impersonal form of limited-liability companies to deal with. Much mischief has arisen and will probably continue to be experienced from this change. When a trader embarks his own resources, and finds that in place of making a profit he is losing money, he curtails his commitments; but when a limited-liability company is in a similar position, it as often as not extends its works with borrowed capital, and endeavours by increased production to overcome the effect of smaller percentage profits, if, indeed, it does not actually continue to carry on increased production at a loss, under the impression that it will be able to crush out the competition of other joint stock companies and private producers having smaller resources to work with. Such a change in the condition of doing business may, unless a check is imposed on indiscriminate company promotion, work mischief, and be aggravated by the circumstance of large capital being created with a fixed yearly charge irrespective of whether the company makes a profit or not."

The following is the Index to the contents of the Supplement from which the foregoing is taken:—

Financial and Commercial History of 1887.

The Cotton Trade—The Woollen Trade—The Iron and Metal Trades—The Money Market and Prices.

Extracts from Trade Circulars.

(*Illustrated with Diagrams showing the Course of Prices, &c.*)

The Iron Trade—Engineering—Shipbuilding—Copper—Tin—Lead—Spelter—Quicksilver—Antimony—Coal—Chemicals—Tallow

—Leather, Hides, &c.—Petroleum—Turpentine—Wood—Indigo. *Textiles, &c.,* Cotton—Wool—Silk—Jute—Linen. *Food, &c.,* Wheat—Rice—Sugar.

Tabular Appendix.

BANK RETURNS—

Bank of England—Bank of France—Imperial Bank of Germany—Austrian National Bank—Bank of the Netherlands—Associated New York Banks.

Allotments of India Council Bills in 1887—Government Grants and Telegraphic Transfers—Indian Bank Rates—Public Revenue.

BANKERS' CLEARING HOUSE RETURNS—

London—Manchester—Settlings on the 4th of the Month—Stock Exchange Settling Days.

Exchanges and Bullion—Foreign Market Rates of Discount—Bullion—Price of Silver—Weekly Prices of Leading Public Securities during 1887—Prices of Leading Stocks—Foreign Trade—Failures of 1887—Railway Traffic of 1887—Railway Dividends—Prices of Wholesale Commodities.

III.—*Fires in London during the Year* 1887, *and the Metropolitan Fire Brigade.*

THE following particulars are taken from Captain Shaw's Report for 1887, to the Metropolitan Board of Works, in continuation of similar notices for previous years:—

"The number of calls for fires, or supposed fires, received during the year has been 3,059. Of these 528 were false alarms, 168 proved to be only chimney alarms, and 2,363 were calls for fires, of which 175 resulted in serious damage, and 2,188 in slight damage.

"These figures only refer to the regular calls for fires, or supposed fires, involving the turning out of firemen, fire engines, fire escapes, horses, and coachmen; they do not include trifling damages by fires which were not sufficiently important to require the attendance of firemen; neither do they include the ordinary calls for chimneys on fire, which are separately accounted for further on.

"The fires of 1887, compared with those of 1886, show an increase of 214; but compared with the average of the past ten years, an increase of 408.

"The number of fires in the metropolis in which life has been seriously endangered during the year 1887 has been 146; and the number of these in which life has been lost has been 42.

"The number of persons seriously endangered by fire has been 198, of whom 143 were saved, and 55 lost their lives. Of the 55 lost, 28 were taken out alive, but died afterwards in hospitals or elsewhere, and 27 were suffocated or burned to death.

"The following table gives the result both in actual numbers and percentages:—

Year.	Number of Fires.			Percentages.		
	Serious.	Slight.	Total.	Serious.	Slight.	Total.
1866	326	1,012	1,338	25	75	100
'67	245	1,152	1,397	18	82	100
'68	235	1,433	1,668	14	86	100
'69	199	1,373	1,572	13	87	100
'70	276	1,670	1,946	14	86	100
'71	207	1,635	1,842	11	89	100
'72	120	1,374	1,494	8	92	100
'73	166	1,382	1,548	11	89	100
'74	154	1,419	1,573	10	90	100
'75	163	1,366	1,529	11	89	100
'76	166	1,466	1,632	11	89	100
'77	159	1,374	1,533	10	90	100
'78	170	1,489	1,659	10	90	100
'79	159	1,559	1,718	9	91	100
'80	162	1,709	1,871	9	91	100
'81	167	1,824	1,991	8	92	100
'82	164	1,762	1,926	9	91	100
'83	184	1,960	2,144	9	91	100
'84	194	2,095	2,289	9	91	100
'85	160	2,110	2,270	7	93	100
'86	151	1,998	2,149	7	93	100
'87	175	2,188	2,363	7	93	100

* * * * *

"The number of calls for chimneys has been 1,655. Of these 517 proved to be false alarms, and 1,138 were for chimneys on fire. In these cases there was no attendance of engines, but only of firemen with hand-pumps.

"The number of journeys made by the fire engines of the 55 land stations has been 33,554, and the total distance run has been 64,294 miles.

"The quantity of water used for extinguishing fires in the metropolis during the year has been over 26 million gallons, or about 117,000 tons. Of this quantity, about 57,000 tons, or nearly half of the whole, was taken from the river, canals, and docks, and the remainder from the street pipes.

"During the year there have been 11 cases of short supply of water, 11 of late attendance of turncocks, and 6 of no attendance, making altogether 28 cases in which the water arrangements were unsatisfactory.

"This is an improvement on the previous year, in which there were 29 such cases; and I have great pleasure in recognising the successful exertions of the water companies and their officials in the matter.

"I have also, as usual, to express great obligations to the metropolitan and city police, whose cordial and energetic co-operation has never failed the brigade at any time.

"The strength of the brigade is as follows:—

55 land fire engine stations.
4 floating or river „
27 hose cart stations.
127 fire escape „
5 steam fire engines on barges.
45 land steam fire engines.
78 six-inch manual fire engines.
37 under six-inch manual fire engines.
30 miles of hose.
74 hose carts.
2 self-propelling fire floats.
5 steam tugs.
9 barges.
146 fire escapes.
9 long fire ladders.
9 ladder vans.
2 „ trucks.
1 trolly for ladders.
1 „ engines.
11 hose and coal vans.
10 waggons for street duties.
5 street stations.
102 watch boxes.
591 firemen, including chief officer, and all ranks.
16 pilots.
67 coachmen.
131 horses.
68 telephones between fire stations.
54 alarm circuits round fire stations.
20 telephones to police stations.
15 telegraphs
23 telephones
17 fire alarms
to public and other buildings.

"The substitution of telephones for telegraphs, which was commenced some years ago, has been completed, and proves a great advantage in the working of the establishment. The messages of the brigade are now transmitted by telephone in considerably less time, and with much greater certainty than by any system of telegraphing.

"The number of firemen employed on the several watches kept up throughout the metropolis is at present 115 by day and 245 by night, making a total of 360 in every twenty-four hours; the remaining men are available for general work at fires.

"Our list of wounds and other injuries for 1887 is, as usual, very heavy; but the nature of the work, and the way in which it is always carried out, involve a certainty of numerous accidents.

* * * *

"A reference to the figures in this report will show that the total number of calls, including those for actual fires, supposed fires, chimney fires, and supposed chimney fires, has been 4,714, or just 13 a day, all of which have been attended by firemen with suitable appliances.

"In addition to attending fires the brigade has kept 131,400 watches of twelve hours each, has made 12,000 hydrant inspections, has maintained all the machinery of the establishment in working order, written several thousand reports and letters, and carried on a variety of other work.

"This represents an amount of work for each member greater than can be shown by any other force with which I am acquainted; and as the number of fires is always increasing, I venture to express a hope that it may shortly become possible to make a corresponding increase in the strength of the brigade.

"In the meanwhile all ranks are working cheerfully and energetically, and no efforts will be spared to produce the best possible results with the means at the disposal of the brigade."

* * * *

The following particulars (*a*, *b*, *c*) are obtained from the tables appended to the report, viz.:—

(*a*) The fires classified according to occupations, arranged in the order of frequency of occurrence; to which are added, for the purpose of comparison, the corresponding figures for the three previous years:—

Number.	Occupations.	Number of Fires.			
		1887.	1886.	1885.	1884.
1	Private houses	594	535	558	530
2	Lodgings	320	297	295	309
3	Drapers	49	37	35	35
4	Victuallers	46	51	57	77
5	Grocers	43	49	39	28
6	Oil and colourmen	41	41	44	52
7	Coffee houses	38	26	28	20
8	Under repairs and building	35	14	21	31
9	Tobacconists	32	26	29	24
10	Builders	30	26	31	26
11	Greengrocers and fruiterers	29	20	22	38
12	Tailors, clothiers, and outfitters	29	33	33	34
13	Boot and shoe makers	28	46	26	26
14	Cabinet makers	27	21	26	28
15	Bakers	26	22	27	23
16	Farming stock	26	12	17	17
17	Chandlers	24	20	10	19
18	Furniture makers and dealers	24	13	16	15
19	Confectioners and pastrycooks	23	27	21	17
20	Stables	23	18	19	25
21	Unoccupied	23	32	30	33
22	Refreshment rooms	22	15	24	24
23	Offices	21	20	32	28
24	Booksellers, binders, and stationers	20	19	23	20
25	Fried fish shops	19	16	17	17
26	Hotels and club houses	19	14	22	6
27	Warehouses	19	14	19	13
28	Butchers	17	9	10	12
29	Printers	17	26	18	25
30	Beershop keepers	16	14	13	24
31	Corn dealers	15	17	21	22
32	Laundries	15	6	11	8
33	Hairdressers	14	14	19	14
34	Railways	14	9	13	21
35	Wardrobe dealers	14	9	6	7
36	Carpenters and workers in wood	13	13	24	9
37	Chemists and laboratories for chemical purposes	13	8	13	13
38	Fishmongers	13	9	6	9
39	Wine and spirit merchants	13	4	10	14
40	Cheesemongers	11	8	11	3
41	Engineers and machinists	11	11	10	20
42	Hatters	11	11	10	9
43	Looking glass and picture frame makers	11	6	8	6
44	Schools	11	14	10	12
45	Carriers	10	7	2	7
46	Contractors	10	6	8	6
47	Ironmongers	10	9	14	6
48	Jewellers	10	3	6	5
		1,899	—	—	—
	Remainder, varying from 9 to 1	464	—	—	—
		2,363	—	—	—

(*b*) The fires classified under the causes to which they have been assigned, and arranged in the order of frequency of occurrence:—

	Causes.	Number of Fires.
1.	Unknown	691
2.	Lamps (not gas) and lights (thrown down)	483
3.	Gas (in various ways)	188
4.	Defective, or improperly set—flues, hearths, stoves, &c.	181
5.	Sparks from fires, &c.	161
6.	Candles	142
7.	Overheating of—flues, ovens, furnaces, boilers, stoves, &c.	82
8.	Children playing with fire, matches, &c.	78
9.	Hot ashes	63
10.	Boiling over, or upsetting of fat, pitch, &c.	50
11.	Lucifer matches	42
12.	Airing linen and drying stoves	40
13.	Foul flues, &c.	33
14.	Smoking tobacco	20
15.	Spontaneous ignition	16
16.	Lime slaking by rain and otherwise	15
17.	Spirits, or vapour of spirits, in contact with flame	10
18.	Fireworks	7
19.	Doubtful	6
20.	Fumigating	5
21.	Portable gas stove	5
22.	Burning rubbish	4
23.	Friction of machinery	4
24.	Incendiarism	4
	Miscellaneous, varying from 3 to 1	33
	Total	2,363

(*c*) The following table giving the totals of the fires for each day of the week for the last ten years, shows on the average that the largest number of fires occur on Saturday and the smallest number on Monday. The annual average number of fires for the last ten years is 2,038:—

Years.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Total.
1878....	260	191	271	234	214	236	253	1,659
'79....	235	212	231	257	264	251	268	1,718
'80....	288	262	253	259	254	266	289	1,871
'81....	270	267	315	288	279	253	319	1,991
'82....	285	246	296	267	281	274	277	1,926
'83....	297	334	309	318	269	295	322	2,144
'84....	296	330	304	335	338	340	346	2,289
'85....	331	319	321	338	326	300	335	2,270
'86....	294	293	294	317	306	304	341	2,149
'87....	327	297	352	336	357	292	402	2,363
Total...	2,883	2,751	2,946	2,949	2,888	2,811	3,152	20,380

IV.—*The Effects of Shipping Bounties. By* M. ARTHUR RAFFALOVICH.

(Translated from the *Journal des Economistes*, December, 1887.)

THE United States Government published in 1886 a series of reports upon the condition of the shipping industries of France, Germany, England, and Italy, accompanied by a despatch addressed by Mr. Bayard to President Cleveland, in which the Secretary of State said: "This subject has assumed considerable importance of late by reason of the efforts made by certain of the leading commercial European nations to stimulate the mercantile marine by direct or indirect assistance, and thus to invest it with an energy which was considered unattainable without such aid. France, Germany, and Italy are paying bounties under various forms with a view to stimulate the construction of vessels, to encourage navigation, and to place their mercantile navies in a more favourable condition for securing a larger share in the carrying trade of the world than they would be in a position to obtain under ordinary circumstances and under the *régime* of free competition. Had this policy been confined to a single nation, this particular nation might have derived some benefit, though the conclusion reached in the report of Mr. Ford would seem to show that in France, where liberal bounties on the construction and navigation of vessels have been paid since the year 1881, the result has in no respects fulfilled the expectations of those who favoured this policy. When other nations enter the lists and meet privilege with privilege and bounty with bounty, no advantage is gained, and the conditions of competition are radically changed. That nation which bids highest, which is most liberal in its bestowal of bounties and conventions, holds the position of vantage, but only retains it until other nations are willing to pay the same. Whatever advantages France has gained during the last four years, will to a certain extent be neutralised by the adoption of a bounty policy by Germany and Italy. This policy may lead to the construction of a certain amount of new tonnage, but it is an open question whether there is a legitimate demand for this additional tonnage. The indications are at present that there is a carrying capacity in excess of the world's needs, and if this is a fact any additional ton constructed beyond what is required to repair loss and waste is only so much the more added to the dead weight of surplus tonnage, which, to be profitable, must be dependent upon the bounty of Government, and this bounty is nothing more than a tax imposed upon productive industry for the benefit of an unnecessary and consequently an unprofitable industry. The returns, that is the receipts obtained by the aid of so costly a policy as the bounty system in France, are insignificant, and entirely due to artificial conditions. Judging by past experience these conditions must be continued in order to ensure a maintenance to the shipping they have stimulated into existence. To a nation possessed of large commercial interests, the bounties of other nations may bring certain advantages in the form of reduced rates of freight resulting from increased competition. It may well be doubted whether it would be politic to sacrifice this advantage and to impose an additional burden upon productive industry by the adoption of a system of bounties."

This is a most excellent report, and what we gather from it is that in the artificial encouragement given to a particular branch of industry which it is desired to call into existence or develop, the taxpayers are called upon to defray the cost of this abnormal cultivation; the branch of industry is forced into a growth disproportionate to the actual requirements; the inducements held out by governmental protection attract capital; the competition between persons of the same nationality may become very keen, and diminish the profits, reduce them in fact to a minimum; and finally a crisis becomes imminent by reason of the price of the articles ceasing to be remunerative.

Those who profit by this international competition are foreigners, who complacently look on at the fall in the cost of maritime transport. Following the same reasoning, the makers of steel rails in Germany, protected by customs duties, are enabled to dispose of their goods at a cheaper rate abroad, when the home consumers (or the taxpayers when it becomes a question of purchases made by the State railways) have to submit to higher prices. State favours are never bestowed gratuitously when the State intervenes for the advantage of a particular class of producers. Government intervention, by stimulating the production of an article, or the offer of a service out of all proportion with the actual demand, creates fictitious prices and upsets the markets. The conference which lately sat in London to examine once again into the sugar question is a tangible proof of the disadvantages of the bounty system.

All this is quite in keeping with the *régime* of agricultural and industrial protection under which we are now living. Protection is composed of contradictory ideas. It is anxious to defend the home markets against the invasion of foreign products, and yet by compromises, in order to gain sympathy, it defeats its own ends. Have not shipping bounties, by encouraging the construction of vessels, by lowering freights and the cost of transport, rather a tendency to improve relations with foreign countries and to swell the volume of imports?

The increase in customs duties has for its averred object the increase in prices, and consequently the enhancement in the rate of wages and an increased cost of living—an additional burden in the struggle for international outlets; and it is to compensate for these effects that the interests of the merchant navies have been taken into consideration, and subventions granted. It becomes imperative, forsooth, that we should be on an equality with England, in which country vessels are more cheaply built, and which is better furnished with tools!

The adoption of a liberal policy has made the grandeur of the merchant navy of England, as much as the use of metal in ship building and of steam as a propelling power. Her coal mines, her mining industries, the skill of her artificers and workmen, have assured to this country the greatest advantages, of which however she had not the monopoly. Thanks however to the adoption of free trade principles, raw materials have flowed into her ports to provide for the wants of home consumers and to meet the requirements of the manufacturers; while the exports, and particularly those of coal, increased with the extension of steam shipping.

English builders and shipowners complain of the adoption of the system of subventions and bounties by foreign States, and yet up to the present the scope and success of these measures have been in great measure counterbalanced by the obstacles that the protectionist policy has placed in the way of the development of the maritime industry by the enhanced cost of building materials and manual labour, and, in addition, in the United States by the difficulties in the way of nationalising vessels built elsewhere than in that country. Thirty years ago the merchant fleet of the United States was a formidable rival to England. The prophecies of De Tocqueville that America would have the supremacy of the seas have not however been fulfilled. He said: "When I see the spirit with which Anglo-Americans carry on trade, the facilities they possess for doing it, the success which they attain in it, I cannot help believing that they will one day become the first maritime power of the globe. They are impelled to take possession of the sea as the Romans were to conquer the world."

If other branches of national production experienced a considerable development after the wâr of secession, it has been far otherwise with the merchant navy, the decadence of which is a fact not only instructive in itself, but is the direct result of protection.

The maritime commerce of the United States certainly suffered much from confederate cruisers and high insurance premiums, but it would doubtless have recovered from this had it not been completely crushed by protection. As an American writer has recently said: "The advantage that England has over us consists simply in that country having abandoned the repressive system of protection, whilst we on the contrary have extended it. This different policy has allowed the English producer to benefit by the international markets, while the American producers are overburdened and confined to the markets of their own country. The ores of Spain and Africa, which for certain purposes are mixed with American ores, have been burdened with a heavy import duty; a high rate of duty has allowed a syndicate of steel manufacturers to keep up steel to a monopoly price, a high customs duty on copper has allowed another great syndicate to obtain enormous prices in the interior of the country for American copper which is exported cheaply to England; and finally in order to encourage a single flag factory, the flag even of an American vessel has been subjected to a duty of 150 per cent. If the vessel has been repaired abroad it must pay for its repairs a duty on its return to America." To this Henry George adds: "Although our navigation laws which forbid the transport of a pound of freight or a single passenger from one American port to another on any other vessel than one built in the United States, obscure the effects of protection upon our coasting trade, the effect is none the less felt. The increase in the cost of construction and navigation, particularly of steamers, has helped to develop our coasting trade;

the higher rates of freight have exercised a prejudicial effect upon other industries; restrictions of this kind have fostered and encouraged monopolies, the effect of protection upon our coasting trade has been to facilitate the extension of railway syndicates. The coalition of the Pacific Railway has for many years paid a monthly sum of $85,000 to the Pacific Mail Steamship Company in order that it may keep up the transit tariff between New York and San Francisco."

The enormous development of the English merchant navy may be said to date from the period when the navigation laws were repealed, and the English shipowners were deprived of all exclusive privileges, while all the markets for building materials were thrown open to them. The following tables, which are taken from Sir Thomas Farrer's work, *Free Trade and Fair Trade*, would appear to afford conclusive evidence of this:—

Statement of the Percentage of the Foreign Trade of the United Kingdom carried on in British Ships, compared (in Thousands of Tons).

Average of Three Years.	Total Foreign Trade. Thousands of Tons.	Total Carried in British Ships. Thousands of Tons.	Proportion of Total Trade Carried on in British Ships. Per Cent.
1854–56	19,582,	11.537,	59
'57–59	22,798,	13,299,	58
'60–62	25,940,	15,004,	58
'63–65	27,613,	18,193,	66
'66–68	32,566,	22,095,	68
'69–71	37,699,	25,632,	68
'72–74	44,123,	29,485,	67
'75–77	49,531,	33,051,	67
'78–80	54,349,	38,025,	70
'81–83	61,468,	44,084,	72
'84	64,273,	46,672,	73
'85	64,282,	46,389,	72

Tonnage belonging to the United Kingdom.

[In thousands of tons.]

1850 (the date of the repeal of the Navigation laws) { 3,397 sailing.
168 steam.

Total 3,565 tons.

Years.	Sailing.	Steam.	Total.	Years.	Sailing.	Steam.	Total.
1869	4,765,	948,	5,713,	1878	4,239,	2,316,	6,555,
'70	4,578,	1,113,	5,691,	'79	4,069,	2,511,	6,580,
'71	4,374,	1,320,	5,694,				
'72	4,213,	1,538,	5,751,	1880	3,851,	2,723,	6,574,
'73	4,091,	1,714,	5,805,	'81	3,688,	3.004,	6,692,
'74	4,108,	1,871,	5,979,	'82	3,622,	3,335,	6,957,
'75	4,207,	1,945,	6,152,	'83	3,514,	3.728,	7,242,
'76	4,258,	2,005,	6,263,	'84	3,465,	3,914,	7,409,
'77	4,261,	2,139,	6,400,	'85	3,457,	3,973,	7,430,

Note.—It seems important to notice that while the aggregate of sailing and steam tonnage has increased, the increase is exclusively in steam tonnage, which is more effective than sailing tonnage as three or four to one.

Over Sea Tonnage belonging to the United States.

[In thousands of tons.]

Years.	Sailing.	Steam.	Total.
1840	899,	4,	900
'50	1,541,	45,	1,586
'60	2,449,	97,	2,546
'70	1,324,	193,	1,517
'80	1,206,	147,	1,353
'81	1,182,	153,	1,335
'82	1,137,	155,	1,292
'83	1,130,	172,	1,302
'84	1,120,	184,	1,304
'85	1,102,	186,	1,288

Total Trade of the United States, carried in United States and Foreign Vessels respectively, with the Percentage carried by each.

[In thousands of dollars.]

Years.	In American Vessels.	In Foreign Vessels.	Percentage in American Vessels.
	$	$	
1840	198,424,	40,802,	82·9
'50	239,272,	90,764,	72·5
'60	507,247,	255,040,	66·5
'70	352,969,	638,927,	35·6
'81	268.080,	1,378,556,	16·3
'82	242,850,	1,284,488,	15·9
'83	261,718,	1,290,030,	16·6
'84	264,722,	1,194,118,	18·1
'85	223,119,	1,108,202,	16·8

Total Tonnage Entered and Cleared in the United States, in each of the Years 1850, 1860, 1870, 1880-85 (*Years ending* 30*th June*), *distinguishing American, British, and other Foreign Vessels.*

[In thousands of tons.]

Years ended 30th June.	Tonnage.				Percentage.			
	American.	British.	Other Countries.	Total.	American.	British.	Other Countries.	Total.
	Tons.	Tons.	Tons.	Tons.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
1850	5,206,	2,845,	659,	8,710,	59·77	32·67	7·56	100
'60	12,087,	4,068,	910,	17,065,	70·83	23·84	5·33	100
'70	6,993,	9,246,	2,085,	18,324,	38·16	50·46	11·38	100
'80	6,834,	20,697,	8,523,	36,054,	18·95	57·41	23·64	100
'81	6,629,	21,651,	8,509,	36,789,	18·02	58·85	23·13	100
'82	6,638,	20,583,	8,116,	35,351,	18·83	58·22	22·95	100
'83	6,563,	18.828,	7,532,	32,923	19·93	57·19	22·88	100
'84	6,439,	17,125,	6,709,	30.273,	21·27	56·57	22·16	100
'85	6,364,	17,762,	6,694,	30,820,	20·65	57·63	21·72	100

The opening of the Suez Canal in 1869 effected a complete revolution in the carrying trade; it gave a great impetus to shipping, but more especially to steamers, and began to modify the general conditions of trade. At the present time two-thirds of the carrying trade is effected by steamers, while in 1879 it did not amount to more than a half, and in 1871 to a third. England owed her predominance as a general *entrepôt* to the uncertainty of sailing voyages round the Cape of Good Hope. At the present day, thanks to the Suez Canal, those markets which were previously dependent upon England can now be directly supplied. The substitution of steam for sailing vessels has brought about the relegation of at least 2 million tons of sailing vessels which have been depreciated. For some time past improvements effected both in construction and working have effected fresh displacements in the capital invested; old vessels have become depreciated in value without being actually laid aside, and they have contributed to the lowering of the rates of freight.

This is the result of various causes: perfection in the construction, which is manifested by the building of larger and faster vessels, capable of carrying a greater quantity of cargo, and the employment of triple expansion engines, which has been accompanied by a considerable economy of coal. The profits made by shipowners have encouraged a great flow of capital in this direction; too many vessels were built. It is perfectly true that the cost of vessels has been steadily decreasing for some time past; it was at the rate of 18*l.* per ton in 1872, 13*l.* in 1877, 12*l.* in 1880, and less than 10*l.* in 1885-86. The general expenses have also been diminished by reductions in the number of the crews. In 1870. 47 men were required for every 1,000 tons steam, while in 1877 the number did not exceed 28. According to M. Kiaer the efficiency of manual labour applied to maritime transport has increased by 24 per cent. during the period 1879-85.

The fall in the rates of freight has been extraordinary, in 1880 the minimum cost of carrying a bushel of wheat from New York to Liverpool was 6*d.*, and the maximum cost 13*d.*; in 1886 the freight amounted to no more than 2½*d.*

Mr. Wells in his articles on the lowering of the rates of freight, estimates that there is an excess of 25 per cent. in the tonnage of the world, and that it will be some considerable time before the equilibrium is re-established. Speculation in England, and bounties on the construction and navigation of vessels have as much contributed to bring about this result as technical improvement. An increase has recently taken place in the rates of freight, but for some time past there has been a very considerable falling off owing to the increase of tonnage and to the depression of trade. The tonnage of sailing vessels belonging to the United Kingdom has fallen from 3,576,755 tons in 1882 to 3,359,389 tons in 1886, while during the same period the steam tonnage increased from 3,331,895 tons to 3,931,746 tons. A steam vessel is equivalent at the least to three sailing vessels of the same size. Simultaneously, as we find from the Board of Trade returns, the tonnage of the cargoes to be carried has diminished, while the number and capacity of the vessels have increased. The result of this was found in the unprecedented fall in the freight market. Spanish ores paid only 4*s.* 6*d.* per ton instead of 9*s.*, and the freight for coal from Newcastle to Cronstadt fell from 5*s.* 3*d.* in 1884 to 4*s.* 6*d.* in 1886. The business of shipowning ceased to be a profitable one, it was in fact carried on at a loss, and the reaction is seen in the diminution in the number of new vessels.

In 1883 768,578 tons were built in the English ship yards; in 1884 497,442 tons, in 1885 406,386 tons, and in 1886 293,000 tons. In 1882 1,215 vessels were lost, in 1886 1,567. For the first time, in 1886 the English mercantile navy lost more tonnage than it built, and the difference amounted to 85,000 tons. The result of this was seen in a greater demand for freights, and since the month of March the rates increased, for the Sea of Azof, from 20*s.* to 23*s.*; while the rates for carrying ore to the United States were 20 per cent. more.

The growth of the various merchant navies has by no means exhibited a constant and steady rate of progression; it has in fact been subject to wide fluctuations—periods of depression have succeeded to periods of inflation. For example, from 1870 to 1874, a period of great commercial activity, the average increase of tonnage was at the rate of 4·6 per cent., and during the four years comprised between 1881 and 1884, at the rate of 5·2 per cent. From 1875 to 1880 there was a decided falling off, the augmentation of tonnage amounting to 2·5 per cent. In 1885 it fell to ·09, while in 1881 it was in the proportion of 3·63; in 1882, 6·59; in 1883, 6·56; and in 1885, 4·10 per cent. In 1880, 627,000 steam tons were built; in 1881, 855,000; in 1883, 1,001,000; in 1884, 616,000; and in 1885, 308,000 tons. In the construction of steam vessels the period comprised between the years 1878 and 1884 was one of great activity, seeing that the average increase of tonnage was established in the ratio of 8·9; while for the year 1882 it was in the ratio of 13·2 per cent. For some time past however a serious falling off has been apparent, as the following figures will show: an increase of 12 per cent. in 1883, 6·8 per cent. in 1884, and only 1·02 per cent. in 1885. It may be observed that the shipping bounty system came into operation in France in the year 1881.

The spirit of protection has spared no branch of national activity, and the bargains concluded between agriculturists and industrials are too well known to need recapitulation here. The carrying trade has been swallowed up equally with the rest, and precisely the same arguments have been employed to obtain State aid for this as for other branches of industry. It was imagined that the reason for applying for special assistance to be accorded to the mercantile marine was in the hope that if this branch of industry were encouraged and developed, the whole economic organisation would be strengthened, and that all branches of industry would benefit by it. It was to be simply a temporary assistance, a protection to last only as long as the crisis lasted. In every country the sailing tonnage was rapidly declining, and it was a declension due to permanent and natural causes.

The first nation to adopt a policy of bounties pure and simp

Google

was France, whose sailing tonnage was rapidly diminishing, more rapidly in fact than that of her neighbours. Her sailing tonnage decreased 27 per cent. between 1873 and 1880, and compared with her immediate neighbours this was an unfavourable showing, as the sailing marine of the United Kingdom had decreased in the same way about 5 per cent., that of Italy about 7 per cent., and that of Germany about 10 per cent. At the same time there was no cause for alarm, as the steam tonnage was increasing, and the more rapid was this substitution of steam for sail, the more efficient was the French marine becoming, and the more speedily was it being placed in a condition to compete with greater effect against its rivals, not only in its own commerce, but in the carrying trade of the world. To recur to the period 1873-80, steam tonnage increased in France 50 per cent., in the United Kingdom 58 per cent., in Germany less than 29 per cent., and in Italy 58 per cent. These figures however do not convey a sufficiently accurate idea of the actual condition of affairs, and it will be the more readily understood when we state that the additional steam tonnage in France amounted to 92,000 tons, while in England 1,009,000 fresh tons were built.

As compared then with her neighbours Germany and Italy, France stood in a very favourable position, and unless the rapid substitution of steam for sail must be counted as a disadvantage, was more prosperous and more advanced than either Germany or Italy. The actual strength of her mercantile navy had doubled from 1847 to 1887, and since that period has increased by half. As a matter of fact this increase has not been quite spontaneous, legislation having more or less invariably protected French shipowners against foreign competition. De Foville in his *France Economique* says: "What more than anything else prejudices the development and prosperity of our flag, is the fact that our cargoes inwards are much heavier than our cargoes outwards. Outward freights are rare in France, and this is evidently a disturbing element in the prosperity of a country's merchant navy. There is an enormous disproportion from the point of view of the quantities to be carried between the imports and the exports. With raw materials predominating on the one hand, and manufactured articles on the other, it will be readily seen that the proportion of the weights is very different to that of the values. A reference to the following statement will show the values and weights of the articles imported into France during each of the years 1883-85 :—

General Trade.

[000's omitted.]

	Values.			Quantities.		
	1883.	1884.	1885.	1883.	1884.	1885.
	frs.	frs.	frs.	tons.	tons.	tons.
Imports by sea	3,881,000,	3,422,000,	3,318,000,	13,400,	12,300,	12,000,
Exports ,,	3,105,000,	2,813,000,	2,667,000,	3,900,	3,700,	3,700,

The law of the 29th January, 1881, dealt with the question of the bounties to be granted to merchant shipping. Until that date, and in virtue of the law of 1866, ship builders enjoyed the privilege of importing into the country free of duty all materials employed in the construction and equipment of vessels; this privilege was eventually abolished, as it was no longer in accordance with protectionist ideas, and in exchange Government subsidies were granted.

Under the law of 29th January, 1881, it was decreed that in compensation of the charges imposed upon ship builders by the customs tariff, the following allowances are made per ton gross:—

	frs.
For vessels of iron or steel	60
„ wood of 200 tons or less	20
„ „ less than 200 tons	10
„ mixed construction	40

By mixed vessels we understood such as are boarded with wood, the ribs and beams being entirely of iron or steel. For the propelling machinery on board steam vessels, and for auxiliary apparatus such as steam pumps, motors of service winches, ventilators mechanically moved, also the boilers that supply them and their tubes, 12 frs. per 100 kilogrammes. When the boilers are changed the owner of the vessel receives a compensation of 8 frs. per 100 kilogrammes for the new boilers, weighed without the tubes and being of French construction. The regulations for free admission established by Article No. 1 of the law of 19th May, 1886, and Article 2 of the law of 19th May, 1887, were suppressed.

State assistance is not confined alone to the construction of vessels, as we find by the same law that it is extended to navigation, Article 4 of 1877 reading as follows:—

"In compensation of the charges imposed upon the merchant marine for the recruiting and service of the navy, French sailing vessels and steamers receive for a period of ten years, beginning with the promulgation of the present law, a navigation bounty. This bounty is exclusive for navigation *au long cours* (long sea voyages). It is fixed at 1·50 frs. per ton net, and per 1,000 miles sailed for vessels of French construction leaving the yard, and diminishes yearly ·075 fr. for wooden vessels, ·075 fr. for mixed vessels, 0·5 fr. for iron vessels. The bounty for vessels of foreign construction is reduced by one half from the above. Vessels registered before the promulgation of the present law receive the same bounty as vessels of French construction. The bounty is 15 per cent. more for steamers built according to plans previously approved by the navy department. The number of miles sailed is calculated according to the distance between the ports of departure and arrival, measured on a direct maritime line. In case of war the Government may requisition the vessels."

With the international jealousy then existing, the law which affected the power of other countries to compete with the French merchant navy was certain to find many imitators abroad. The new legislation encouraged the shipbuilding industry twofold, first by the direct bounty on the construction, and secondly because the bounties on navigation were fixed at a higher rate for vessels of French origin. There is a very wide difference between the theory and practice of bounties, which will be readily appreciated when we state that according to the report of the United States' Consul at Marseilles, a steamer costing 1,250,000 frs. would receive 17 per cent., whereas in discussing the Bill of 1881, and before it became law, it was asserted that the maximum bounty would never exceed 11 or 12 per cent.

To maintain the merchant marine at its level of 1879 it would be necessary to devote a sum of 1,500,000 frs. annually, and to stimulate the construction in the early years at the rate of 56,000 tons, an additional 2,732,000 frs., making an aggregate of 4,275,000 frs. The merchant shipping was then to increase at a slow rate, and only on a pace with the general improvement of the French shipping trade, which would lead to a considerable decrease of State aid. Under these circumstances the amount of State aid required for ship building would after a lapse of a few years prove to be about 1,930,000 frs. annually. The French steam tonnage has increased in the period 1880-84 from 277,759 tons to 511,072 tons, or 233,313 tons, which is an average of 58,000 tons a year. In 1881 it was estimated that in the ten years during which the navigation bounties were to continue, more than 70 million francs would be required, and as we have pointed out above, the bounties are decreased each year by a tenth. The following is a statement of the sums expended: In 1881, 3,875,000 frs.; in 1882, 5,215,000 frs.; in 1883, 8,104,000 frs.; in 1884, 8,592,000 frs.; in 1885, 7,769,000 frs.; and in 1886, 7,633,000 frs. The bounty is about 5 frs. per mile sailed for a vessel of 2,000 tons burthen, constructed with all the latest improvements, and traversing a maximum distance of 40,000 miles during the year.

There is an important fact which should not be lost sight of, and that is that the bounties have been practically of no avail in stopping the continued decrease of the sailing tonnage, for during the period comprised between the years 1880-84 we find a diminution of 18 per cent. During the three years 1881-83 105,000 tons were constructed, for which a sum of 1,100,000 frs. was expended in bounties. As regards steam tonnage there was a gain to the country of 47,000 tons between 1877 and 1880, or a proportion of 20 per cent.; from 1880 to 1884 five times as much, or a total of 233,313 tons; of these 167,249 were for vessels of 1,200 tons and above.

During the ten years preceding the shipping bounty law the aggregate French tonnage had decreased 14 per cent., the Italian 1 per cent., while Germany had benefited to the extent of 15 per cent. During the four years 1880-83 the Italian tonnage continued to show a decline to the extent of 2·6 per cent., while that of France increased 8 per cent., and that of Germany nearly 7 per cent.; and thus, without the fictitious aid of bounties, the German merchant marine increased nearly as much proportionately as the ubsidised French shipping. The steam tonnage of these three countries has exhibited a more or less regular rate of progression since 1873. From 1873 to 1880 the French merchant marine, without any assistance from the State, showed a greater development than either of its rivals in Germany and Italy; while from 1880 to 1885 the results are still more remarkable, looking either at the numbers or tonnage of the vessels.

Germany has exhibited an improvement relatively greater than that of France, and this, be it understood, without State aid. Moreover, the German vessels of later years are relatively of larger tonnage than the French. The following statement will show the merchant navies of France, Germany, and Italy, in each of the years 1873, 1884 and 1886:—

Countries.	Sailing Vessels.			Steam Vessels.		
	1873.	1884.	1886.	1873.	1884.	1886.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Germany....	886,000	880,000	831,000	167,000	413,000	453,000
France........	882,000	522,000	493,000	195,000	511,000	500,000
Italy	997,000	848,000	801,000	48,000	122,000	144,000

The number of steam vessels increased in the years 1880-83 37·3 per cent. in France, 45·6 per cent. in Germany, and 27·2 per cent. in Italy; while the tonnage increased during the same period in France 68·7 per cent., in Germany 73·6 per cent., and in Italy 39·4 per cent. The increase in Germany, where no bounties were paid, was relatively greater both in number and tonnage of vessels than in France, where large bounties were in force after 1881.

M. Felix Faure, in his report upon the budget of the Minister of Commerce and Industry, states that the depressed condition of the merchant navy is due to the excessive development of the construction which has taken place during recent years. From 1880 to 1886 there was an increase of 25 per cent. in tonnage available for transport. In France, where the effects of the law of the 29th January, 1881, were most noticeable in 1881, 1882, 1883, and 1884, there was in 1885 a marked depression in the shipbuilding yards, and it is far from probable that there will be any great improvement in 1888, in view of the approaching lapse of the law of 1881. Exclusive of those companies who receive subsidies for mail services, it is hardly probable that shipowners will manifest any great anxiety to increase their fleets. In 1884 the bounties paid on shipbuilding amounted to 2,898,000 frs. The renewal of the postal contract for the United States has necessitated the employment of vessels of peculiar construction and great speed. The Transatlantic Company has received for its four steamers, "Champagne," "Bretagne," "Gascogne," and "Normandie," 2,537,712 frs. The contract of the 30th of June, 1886, with the Messageries Company will not require such a sacrifice, as the steamers belonging to the actual fleet generally fulfil the necessary requirements both as regards construction and rate of speed. The bounties on construction which in 1885 exceeded 1,129,000 frs., only amounted to

360,000 frs. in 1886, deduction being made of the Transatlantic lines.

"The greater strength of our merchant marine," added M. Faure, "has resulted in enabling our flag to take a larger part in our maritime transport, as will be seen by reference to the subjoined statement:—

General Movement of Shipping.

Years.	Entered with Cargoes.			Cleared with Cargoes.		
	Under all Flags.	Under French Flag.	Proportion under French Flag.	Under all Flags.	Under French Flag.	Proportion under French Flag.
	Tons.	Tons.	Per cnt.	Tons.	Tons.	Per cnt.
1880	11,986,000	3,580,000	29	7,156,000	3,159,000	44
'83	13,225,000	4,456,000	33	8,796,000	4,089,000	46
'86	12,419,000	4,489,000	35	9,164,000	4,355,000	48

"The increasingly important part taken by the French flag in our export trade will be seen from the above; and this is what it behoves us particularly to encourage and maintain, for it is well known that it is a national interest of the first importance for cargoes to be carried to their destination under the national flag."

The chief of the United States Statistical Bureau, Mr. Worthington Ford, takes a less hopeful view of the situation. According to him the shipping engaged in the oversea trade, to which the bounties on navigation apply, has apparently been fostered at the expense of other branches of the French marine, and especially of the coasting trade. The object that was sought to be attained was not a mere increase in the number and tonnage of vessels; it was in fact the extension of the foreign trade of France, and a greater share in the world's carrying power. The demands of a civilised people are limited only by its means, but to multiply vessels does not directly extend the power of purchasing the satisfaction of these needs; it does not increase the number of commodities to be exchanged, any more than the multiplication of cotton machinery will increase the supply of cotton, or the erection of new iron mills the quantity of iron ore above ground. Ships are an instrument of production; but apart from their actual construction they act more in distributing commodities already made, and by extending the market, perhaps indirectly influence future production. By themselves however they do not directly produce, and may even prove destructive. To double existing lines of steamships, where the facilities are sufficient to meet the demands made upon them, is quite as destructive and wasteful as to double existing lines of railroad, where the traffic does not overtax their capacities.

The commercial needs of the world have certainly greatly increased. In 1860 the United States exported only 6 million gallons of petroleum; in 1885 more than 81 million gallons were exported. In 1860 4 million bushels of wheat were sent out of the country, and in 1885 84 million bushels. The result of this has been a vast increase of shipping facilities, and it was for a share of this enormous carrying trade that France adopted a system of bounties on navigation which it was confidently predicted at the time would throw into French hands a large share of the transport trade of the Atlantic, as also of the trade with South America, East India, Australia, and other British colonies. It was urged that French ships could accept freights that would merely cover the expenses of the voyages, and still have from 9 to 12 per cent. assured to them by the shipping bounties.

Mr. Ford is of opinion that a study of the tables showing the tonnage entered and cleared at French ports with cargoes and in ballast would present some interesting features, and it tends to show that the increase of tonnage engaged in the trade with central Europe, Africa, and America has not been accompanied by an extension of the trade itself. It does not appear therefore that the adoption of the bounty system has been productive of such good results as was anticipated. The ships that were to be built and navigated with the aid of the Government were to carry French manufactures into foreign markets, and so encourage and extend domestic manufactures and open up fresh outlets for home made wares. It would appear as if there had been a mere transfer of carriage; what was brought formerly in ships sailing under foreign flags is now brought in French vessels. The French steam shipping participates in the trade with North America to the extent of 55 per cent. instead of only 37·2 per cent. as in 1880; in that with South America to the extent of 62·4 per cent. instead of 49·8 per cent. as in 1880; and in the trade with all America to the extent of 59·9 per cent. instead of 45 per cent. as formerly. And yet the trade between France and America has not increased since 1880.

The question naturally arises, did this transfer of carriage from foreign to French vessels involve a decrease of freights peculiar to French tonnage, a saving in fact to the French shipper alone, commensurate at least with the cost of the bounties? The bounties by stimulating the construction and navigation of vessels have increased the available tonnage out of all proportion, and the consequent reduction of freights has involved a loss to the nation, and not a gain, by throwing upon it the burden of a shipping interest, which without the assistance of the State would have been unprofitable, and that because of such aid cannot conform itself to the actual requirements of trade.

Since the inauguration of this system of bounties there has been a decided falling off in freight rates, which has affected shipowners of every nationality; this fall has been occasioned by other causes than shipping bounties; but it has been disastrous to this particular branch of industry in France. It was with difficulty that it existed in the days when freights ruled high, but it is no longer in a flourishing condition since freights have fallen, and that in spite of the most liberal system of bounties.

All the American consuls who were commissioned by the United States Government to report upon the effect of shipping bounties in France, have been unanimous in declaring that the shipbuilding industry in that country has derived very little benefit from them.

In spite of the bounties given, French ship builders are unable to compete with British shipbuilding yards, the cost per ton in France and in Great Britain is in the proportion of 1 to 1·30. From the passage of the bounty law of 1881, the British shipbuilding yards were stimulated into great activity, because it was to the advantage of the French ship-owners to have their vessels built on British stocks, and to receive half the bounty, than to pay the prices demanded in France. Mr. Sutton, consular agent at Saint Nazaire, writing at the end of 1885, says as follow:—

"With regard to the number and origin (French and foreign construction) of the vessels to which bounties have been granted, it would appear that 141 steamers, 49 of which were of French construction and 92 foreign, had benefited by the law; that 59 iron sailing vessels, 27 French and 32 foreign, and 563 wooden vessels, of which number 452 were built in France and 111 abroad, had also received bounties. The general opinion on the bounty question is that it has failed to produce the effect of serving the shipping trade, and has only resulted in creating a few large steamship companies who have monopolised the whole of the carrying trade to the exclusion of sailing vessels."

The bounty system was introduced with the object of benefiting the French shipbuilding industry, but as a matter of fact it has had a greater effect upon foreign shipbuilding, and has been instrumental in greatly stimulating English shipbuilding. Bounties have not been successful in infusing new life in either shipbuilding or navigation. It is cheaper to purchase vessels in England, where in spite of the cost of labour being perhaps a little higher, free trade allows of the production at a lower rate. Finally it may be asserted that the bounty system in France which was intended to bridge over a temporary depression, has aggravated the situation, and has proved itself to be a source of mischief and not of cure.

V.—*Prices of Commodities in* 1886 *and* 1887.

By AUGUSTUS SAUERBECK, ESQ.

IN the following I give the result of the last two years and of the average of the decade 1878-87 as compared with the standard period of eleven years, 1867-77, which in the aggregate is equivalent to the average of the twenty-five years 1853-77 (see the Society's *Journal*, 1886, pp. 592, 593 and 648):—

	Index Numbers, 1867-77 = 100.			Average Decline as compared with 1867-77.	
	Average, 1878-87.	1886.	1887.	Average, 1878-87.	1887.
				Per cent.	Per cent.
Vegetable food (corn, &c.)	79	65	64	21	36
Animal food (meat and butter)	95	87	79	5	21
Sugar, coffee and tea	76	60	67	24	33
All food	84	72	70	16	30
Minerals	73	67	69	27	31
Textiles	71	63	65	29	35
Sundry materials	81	69	67	19	33
All materials	76	67	67	24	33
All forty-five commodities	79	69	68	21	32
Silver (60·84*d.* per oz. = 100)	82	74·6	73·3	18	26·7

The depreciation for all the forty-five commodities treated in my tables is now at *least* 21 per cent., as illustrated by the average prices of the ten years 1878-87, while in 1887, taken by itself, the decline amounted to as much as 32 per cent.

The fall in the price of silver was 18 per cent. for the last ten years and 26·7 per cent. in 1887, last year's price showing a ratio of 21·13 to 1 gold.

The striking points of last year's figures are the strong decline of meat and oats, the high level of coffee, and the comparative steadiness of many other commodities. During the first ten months prices on the whole ruled very low, but at the end of the year tin and copper rose enormously and many other articles followed the upward movement. The advance was no doubt to a great extent of a speculative character, though there were also indications of some improvement in trade. The average index number rose from 67·7 in October to 69·1 in November and 72·4 in December, but declined again to 70·9 in January and 70·6 in February, 1888.

Making allowance for quantities according to the importance of each article in the United Kingdom on the average of the three years 1884-86, last year's index number would be only 66·7 against 68·1 in 1886.

The following figures show in each case the average index numbers of ten years (see the dotted line in the diagram of the *Journal*, 1886); they give the best picture of the gradual movement of the average prices of whole periods, as the ordinary fluctuations are still further obliterated:—

1867–77 = 100.

1818–27 =	110	1831–40 =	95	1843–52 =	82	1855–64 =	100	1867–76 =	101
'19–28 =	106	'32–41 =	96	'44–53 =	83	'56–65 =	100	'68–77 =	100
'20–29 =	103	'33–42 =	96	'45–54 =	85	'57–66 =	100	'69–78 =	9
'21–30 =	101	'34–43 =	96	'46–55 =	86	'58–67 =	99	'70–79 =	97
'22–31 =	100	'35–44 =	95	'47–56 =	88	'59–68 =	100	'71–80 =	96
'23–32 =	98	'36–45 =	95	'48–57 =	89	'60–69 =	101	'72–81 =	95
'24–33 =	97	'37–46 =	93	'49–58 =	90	'61–70 =	100	'73–82 —	93
'25–34 =	96	'38–47 =	93	'50–59 =	92	'62–71 =	100	'74–83 =	90
'26–35 =	93	'39–48 =	91	'51–60 =	94	'63–72 =	101	'75–84 =	87
'27–36 =	93	'40–49 =	88	'52–61 =	96	'64–73 =	102	'76–85 =	85
'28–37 =	93	'41–50 =	86	'53–62 =	99	'65–74 =	102	'77–86 =	82
'29–38 =	93	'42–51 =	83	'54–63 =	100	'66–75 =	101	'78–87 =	79
'30–39 =	94								

Prices of Commodities.

Number of Article.			Average Prices.				Index Numbers, 1867-77 = 100.	
			1867-77.	1878-87.	1886.	1887.	1886.	1887.
0	Silver	d. p. oz.	58¼	50	45⅜	44⅝	74·6*	73·3*
1	Wheat, English gazette	sh. p. qr.	54½	40	31	32/6	57	60
2	„ American	„	56	43½	35	34	62	61
3	Flour, town made white	sh. p. sack	46	34½	28	28	61	61
4	Barley, English gazette	sh. p. qr.	39	31½	26/7	25/4	68	65
5	Oats, „	„	26	21	19	16/3	73	63
6	Maize, American mixed	„	32½	25	21	21¼	65	65
7	Potatoes, good English	sh. p. ton	117	102	80	85	69	73
8	Rice, Rangoon cargoes	sh. p. cwt.	10	8	6/7	6/10	66	68
1-8	Vegetable food (corn, &c.). Total		—	—	—	—	521	516
9	Beef, prime	d. p. 8 lbs.	59	55½	49	43	83	73
10	„ middling	„	50	46	40	36	80	72
11	Mutton, prime	„	63	64½	62	52	98	83
12	„ middling	„	55	53	50	42	91	76
13	Pork, average (large and small)	„	52	49	45	43	87	83
14	Bacon, Waterford	sh. p. cwt.	74	71	67	61	91	82
15	Butter, Friesland, fine	„	125	116	100	103	80	82
9-15	Animal food. Total		—	—	—	—	610	551
16A	Sugar, West Indian refining	sh. p. cwt.	23	17	11¾	11⅝	50	52
16B	„ beet, German, 88 p. c. f.o.b.	„	24	18	11¾	12⅛		
17	„ Java, floating cargoes	„	28½	21½	14¼	14½	50	51
18A	Coffee, Ceylon plantation, low middling	„	87	78	68	90	78*	104*
18B	„ Rio, good channel	„	64	52	46	78	72*	122*
18	„ total		—	—	—	—	75	113
19A	Tea, Congou common	d. p. lb.	11¼	6¾	6½	5	58*	44*
19B	„ average import price	d. & dec. per lb.	17½	12¾	11·77	10·62	69*	62*
19	„ total		—	—	—	—	64	53
16-19	Sugar, coffee, and tea. Total		—	—	—	—	239	269
1-19	Total food		—	—	—	—	1,370	1,336

* Figures not included in the general average. Silver compared with 60·84*d.* per ounce being the parity between gold and silver at 1 : 15½.

Prices of Commodities—Contd.

Number of Article.			Average Prices.				Index Numbers, 1867-77 = 100.	
			1867-77.	1878-87.	1886.	1887	1886.	1887.
20	Iron, Scotch pig	sh. p. ton	69	46	39/11	42/3	58	61
21	„ bar	£ p. ton	8¼	5½	4⅝	4⅝	56	56
22	Copper, Chili bars	„	75	55	40	44	53	59
—	„ English tough cake	„	81	60	44	47	—	—
23	Tin, Straits	„	105	89	98	112	93	107
24	Lead, English pig	„	20¼	14	13¼	12⅞	65	63
25	Coals, Wallsend Hetton in London	sh. p. ton	22	16¾	16	16	73	73
26	„ average export price	„	12¼	9	8·45	8·32	68	67
20-26	Minerals. Total		—	—	—	—	466	486
27	Cotton, middling Uplands	d. p. lb.	9	6	5⅛	5½	57	62
28	„ fair Dhollerah	„	6¾	4¼	$3\frac{9}{16}$	$3\frac{9}{16}$	53	53
29A	Flax, St. Petersburg 12 head best	£ p. ton	46	33	35	32	75	68
29B	„ Russian, average import	„	48	34	35	31½		
30A	Hemp, Manilla fair roping	„	43	35½	29	34	74	81
30B	„ St. Petersburg clean	„	35	26½	29	29		
31	Jute, good medium	„	19	15	11½	12¼	61	64
32A	Wool, merino, Port Phillip, average fleece	d. p. lb.	21¼	18½	15½	15¾	70	72
32B	„ merino, Adelaide, average grease	„	9⅞	8⅜	6⅝	7		
33	„ English, Lincoln half hogs	„	19¾	11¾	10	10⅝	51	54
34	Silk, Tsatlee	sh. p. lb.	23	15	13¾	14½	60	63
27-34	Textiles. Total		—	—	—	—	501	517
35A	Hides, River Plate dry	d. p. lb.	9	8⅝	8	7¾	85	88
35B	„ salted	„	7	6¾	5¾	6¼		
36	Leather, crop hides, 30—45 lbs.	„	16	15	15	15	94	94
37A	Tallow, St. Petersburg Y.C.	sh. p. cwt.	45	41	31	31	63	61
37B	„ town	„	45	35½	26	24		
38	Oil, palm	£ p. ton	39	32½	24	22	61	56
39	„ olive	£ p. tun	50	40	38	34	76	68
40A	„ linseed	£ p. ton	30	23	20½	20½	69	65
40B	Seeds, linseeds	sh. p. qr	60	46	42	38		
41	Petroleum	d. p. gall.	12½	6⅞	5⅞	5⅝	47	45
42	Soda, crystals	sh. p. ton	92	62	49	50	53	54
43	Nitrate of soda	sh. p. cwt.	14	12½	10	9½	71	68
44	Indigo, Bengal, good consuming	sh. p. lb.	7¼	6	5	4¾	69	66
45A	Timber, hewn, average import	sh. p. load	60	47	43	38	76	70
45B	„ sawn or split, average import	„	54	47	43	42		
35-45	Sundry materials. Total		—	—	—	—	764	735
20-45	Total materials		—	—	—	—	1,731	1,738
1-45	Grand total		—	—	—	—	3,101	3,074
	Consols, 3 per cent.	per cnt.	93¼	99½	100¾	101¾		
	Bank of England rate of discount	„	$3\frac{2}{10}$	$3\frac{2}{10}$	3	$3\frac{3}{10}$		
	London market rate of discount (best bills)	„	$2\frac{9}{10}$	$2\frac{5}{10}$	$2\frac{1}{10}$	$2\frac{4}{10}$		
	Wheat harvest in the United Kingdom (an average harvest of 28 bushels per acre = 100)		94	98	96	114		

VI.—*Distribution of Incomes in Germany.* (Translated from the *Bulletin de Statistique et de Legislation Comparée*, January, 1888.)

The following is a summary of a report upon the material well-being of Germany, addressed by Dr. Engel, late Director of the Prussian Statistical Bureau, to the Society of Political Economy of Berlin, in the month of December last. This work will be found to be interesting, as supplementing those of a similar nature which have been published from time to time by MM. Neumann-Spallart, Soetbeer, Giffen, Leone Levi, and Atkinson.

The income tax assessments in those countries where the tax is imposed furnishes us with the most convenient basis for estimating the national wealth. Soetbeer, who has devoted much time and attention to the study of this question, has estimated that in Prussia the proportional distribution of incomes was established as follows in the years 1872, 1878, and 1884-85:—

Classes of Income.	Proportion of each Class in		
	1872.	1878.	1884-85.
	Per cnt.	Per cnt.	Per cnt.
Up to 525 marks	39·10	39·89	43·18
From 525 to 2,000 marks	56·20	54·80	51·49
„ 2,000 „ 6,000 „	4·12	4·50	4·43
„ 6,000 „ 20,000 „	0·50	0·71	0·79
„ 20,000 „ 100,000 „	0·08	0·10	0·11
Above 100,000 „			
Total	100·00	100·00	100·00

while the following statement shows the mean income per taxpayer and per inhabitant in Prussia in the years 1872, 1878, and 1884:—

Years.	Mean Income.	
	Per Taxpayer.	Per Inhabitant.
	Marks.	Marks.
1872	865	293
'78	918	323
'84-85	918	314

In Saxony the income tax has only been levied regularly since 1879. The following shows the distribution of incomes in this country in 1879 and 1884:—

Classes of Incomes.	Proportion of each Class in	
	1879.	1884.
	Per cent.	Per cent.
Up to 500 marks	51·51	48·28
From 500 to 1,900 marks	41·98	44·93
„ 1,900 „ 6,300 „	5·63	5·75
Moderate incomes (more than 6,300 marks)	0·83	0·93
Large incomes	0·05	0·11
Total	100·00	100·00

while the following statement shows the mean income per taxpayer and per inhabitant in Saxony:—

Years.	Mean Income.	
	Per Taxpayer.	Per Inhabitant.
	Marks.	Marks.
1878	917	321
'79	882	327
'80	878	330
'82	911	330
'84	940	362

It will be seen from the above that the proportion of small incomes has a tendency to increase in Prussia and to diminish in Saxony.

The income is not an end, it is a means to an end; for when it is desired to form an estimate of the extent of wealth, it is the individual expenditure which must first be taken into consideration. This is subject to but little variation as regards amount for individuals of the same sex and of the same age. Expenditure may be estimated in three distinct ways, either according to taxation, or by official inquiries, or again by an examination of private accounts of receipts and expenditure. It is by addressing questions to families and by the methodical scrutiny of family budgets that the following results have been obtained: According to Dr. Engel a number of families accustomed to keep exact accounts of their receipts and expenditure have placed their household accounts at his disposal. "I have before me," he tells us, "accounts admirably kept, representing some 400 marks, and others 180,000 marks of annual expenditure. Several of these accounts are carried over a period of ten and twenty years. One of them in fact embraces a period of more than half a century; it was commenced in 1834; the son had continued it after his father's death, and the granddaughter after the son. This account and many others that I have perused constitute veritable family romances."

To begin with, the incomes were divided as above into six categories, which may be distinguished as follows: insufficient incomes, that is to say those under 525 marks; small incomes, comprising those from 525 to 2,000 marks; ordinary incomes, from 2,000 to 6,000 marks; average incomes, from 6,000 to 20,000 marks; large incomes, from 20,000 to 100,000 marks; and very large incomes, those exceeding 100,000 marks.

Grouping on the one hand the actual bodily requirements, that is to say food, clothing, fire, and medical attendance, and on the other hand the remaining necessaries of life, it will be found that the proportions of the cost of the bodily requirements to the actual incomes are as follows:—

Classes of Income.	Cost of the Actual Bodily Wants in Proportion to Incomes.	Classes of Income.	Cost of the Actual Bodily Wants in Proportion to Incomes.
	Per cnt.		Per cnt.
Insufficient incomes..	101·3	Average incomes	57·6
Small incomes	93·3	Large „	48·8
Ordinary incomes	69·8	Very large „	28·0

It will be observed that in the last five categories the actual bodily wants do not absorb the whole of the incomes, and the excess represents what M. Roscher calls *disposable income.* It is to this margin that the expenditure requisite for a higher scale of living, ease, charity, and progressive improvement should be charged.

The following statement shows in what proportion the annual income of Prussia and the Empire should be distributed, the population of Prussia being to that of Germany as 1 : 1·65:—

Class of Expenditure.	Total Expenditure.		Daily Expenditure per Individual. (Empire.)
	Prussia.	Empire.	
	Marks.	Marks.	Pfennings.
Food	4,605,240,000	7,598,646,000	46·40
Clothing	1,248,300,000	2,059,677,000	12·55
Housing	728,370,000	1,201,810,000	7·32
Heat and light	564,410,000	931,276,000	5·68
Health	264,460,000	436,359,000	2·66
Total for material wants	7,410,780,000	12,227,768,000	75·00
Other necessaries	1,126,240,000	1,858,296,000	11·30
Total	8,537,020,000	14,086,064,000	86·00

The total income of each class and the expenditure for food would give for the Empire the following results:—

Class of Incomes.	Total Income of each Class.	Total Cost of Food for each Class.
	Marks.	Marks
Insufficient incomes	2,666,080,000	1,765,475,000
Small incomes	7,232,811,000	4,484,343,000
Ordinary incomes	2,199,890,000	923,954,000
Average „	1,168,168,000	303,723,000
Large „	593,775,000	100,941,000
Very large „	224,540,000	20,209,000

Dr. Engel concludes with the remark that food alone furnishes a true indication of the standard of material well-being. The more the resources of the individual are limited, the less must his consumption be and the coarser his food. Anthropometrical researches have resulted in showing that the typical man of the poorer classes, by reason of the inferiority of his food, is neither so corpulent nor so heavy as the typical man of the other classes.

VII.—*Unsuitable Subjects for Official Statistics.*

THE question subjoined was put to the Chancellor of the Exchequer (Mr. Goschen) on the 1st of March, and his reply is also subjoined. The question and reply speak for themselves, and it appears to be useful to reprint them, as the return in question, "Imperial Taxation exclusively borne by Real and by Realised personal property respectively," received some attention abroad, where the peculiar circumstances of its origin, and the objections of those who were responsible for it to its being given were not known:—

"Sir R. Paget asked the Chancellor of the Exchequer whether, in view of the proposals referred to in Her Majesty's gracious speech 'for adjusting the relations between local and imperial finances,' and in order to assist the House in arriving at a just conclusion as to the relative incidence of imperial taxation on real and personal property, he would be good enough to lay upon the table of the House a continuation of the return (varied so as to exhibit the current rate of income tax) of 'imperial taxation exclusively borne by real and by realised personal property respectively,' presented by the Treasury in August, 1885, and in the concluding paragraph of which it was stated that 'it is quite certain that the figures which have been adopted for the purposes of this return must approximate very closely to the truth.'

"The Chancellor of the Exchequer.—I am afraid I cannot agree with the hon. baronet in thinking that it would assist the House in arriving at a just conclusion as to the relative incidence of imperial taxation on real and personal property if I were to grant a continuation of the return in question. The words he quotes from the end of the memorandum annexed to the return of 1885 as to the trustworthiness of the figures applied only, I am informed, to the figures relating to the death duties, and not, as the hon. baronet appears to think, to the return generally. I have studied the return with some care, and I have consulted its compilers as to its value. They tell me that even in the less conjectural parts there was much division of opinion among them, and they had considerable difficulty in coming to any agreement, and I need not remind the hon. baronet of the severe criticisms passed upon it at the time. To me the figures given in the return are very interesting, though I cannot help recognising their conjectural and speculative character; but I think that tables in which this conjectural element enters so largely should be published rather by private statisticians than on the authority of the Government—an authority which is apt to be misunderstood."

VIII.—*The Abuse of Statistics.*

With reference to the translation of an article by M. de Foville on Mr. Mulhall's statistics, which appeared on p. 703 of the December number of the *Journal*, the following is extracted from a report of the proceedings of the Paris Statistical Society at a meeting held on the 18th January last, which was published in the Journal of that Society for February:—

M. de Foville called attention to a letter which he had received from Mr. Mulhall with reference to the article published in the *Journal de la Société de Statistique de Paris* for October last. Under the title of "Un Statisticien fantaisiste," M. de Foville referred to Mr. Mulhall's publications in terms which M. Bodio, Mr. Giffen, and other competent judges were of opinion were none too severe.

"It might perhaps have been imagined," said M. de Foville, "that my strictures would have drawn from Mr. Mulhall some strong expressions of dissent; but on the contrary he appears to be perfectly satisfied with my remarks, and I do not yet despair of seeing my article serve as a preface to his future editions. Mr. Mulhall has committed another little blunder in forwarding to the *Economiste Français* a reply intended for the *Journal de la Société de Statistique.* To this however I take no exception, as I am indebted to it for the pleasure of bringing this communication to you myself. It comes from some distance; in fact it is written from Buenos Aires, and is dated the 6th of December last. The letter is as follows:—

" '*To the Editor.*

" 'Sir,—I have just read a most amusing phillipic by M. de Foville, inspired by the English Government (on account of my statistics of Ireland), in which he calls attention to the fact that he has discovered two mistakes in my *Dictionary of Statistics*, the first being that the number of dogs in France should have been stated as 2,775,000, and the second that the consumption of salt in France only amounted to 300 millions of kilogrammes instead of 800 millions, and the exports barely exceed 20 millions. M. de Foville was probably thinking only of the kitchen consumption of salt, and entirely ignored the fact that about 60 per cent. of the total is used in various manufactures.

" 'As regards the number of dogs I suppose he is correct.

" 'He goes on to say that my *Dictionary* contains some 100,000 figures. If the remaining 99,999 are correct, it is more than I ever dared to hope.

" 'As an act of justice I am sure that you will insert this letter in your journal, to correct the error into which M. de Foville has fallen.

(Signed) " 'MICHAEL G. MULHALL.'

"The idea of imagining that my article was inspired by the English Government," concluded M. de Foville, "is certainly an original one, but not more so than that of regarding it as a testimonial to the accuracy of his *Dictionary of Statistics*. As regards the salt question, if the Society wished it nothing would be easier for me than to justify my criticism. For the moment however I will confine myself to observing that if Mr. Mulhall has been prodigal of salt in his *Dictionary*, he still has a sufficiency remaining to put into his correspondence."

IX.—*German Literature in* 1886 *and* 1887.

THE following is taken from the *Publishers' Circular* of the 1st February, 1888:—

"The following comparative table of German publications during the years 1886 and 1887 is extracted from the *Börsenblatt* of 25th January. The table is prepared by the celebrated house, Messrs. J. C. Hinrichs, of Leipzig, whose admirable catalogues of German literature are standard works:—

	1886.	1887.
1. Collected works—history of literature, bibliography	432	439
2. Theology	1,517	1,456
3. Law, politics, statistics, &c.	1,362	1,369
4. Medicine, veterinary	1,016	1,082
5. Natural history, chemistry, pharmacy	1,044	867
6. Philosophy	138	126
7. Education, German school-books, &c.	1,916	2,063
8. Juvenile works	397	464
9. Classical and oriental archæology, mythology	566	585
10. Modern languages, old German literature	570	585
11. History, biography, memoirs	800	722
12. Geography, travel	429	370
13. Mathematics, astronomy	224	223
14. Military, hippology	404	389
15. Commerce and manufactures	680	725
16. Building, machines, railways, mining, &c.	437	377
17. Forestry and sport	122	81
18. Domestic economy, farming, horticulture	416	452
19. Belles-lettres	1,461	1,402
20. Fine art, shorthand	657	648
21. Folk-lore, almanacks	757	729
22. Freemasonry	16	16
23. Miscellaneous	497	387
24. Maps	395	415
Total	16,253	15,972

"These figures are interesting if only by way of comparison with the annual table of literary production in England. The first thought of any ordinary person on seeing the two statements side by side would be, 'how many more books they print in Germany than in England!' seeing that the total number of books published in these islands is computed at less than 6,000 per annum. But 'Germany' is a geographical expression. Even Germans ask, ironically or otherwise, 'wo ist des Deutschen Land?' However, to put the matter compactly, we believe that the united population of the German empire and the Austrian empire is about double that of the United Kingdom. If we add to the great German empires the population of those countries—Switzerland for example—whose publishers are members of the Börsenverein, or association of German booksellers, we reach a total of population not far from two and a quarter times that of the United Kingdom. If so, the number of books published here is as many per head as in Germany, while the number of small and unimportant books is a far larger fraction on the continent than with us."

X.—*English Literature in* 1887.

The following particulars are taken from the *Publishers' Circular* of the 31st December, 1887, in continuation of a series of similar extracts for previous years:—

"In presenting our annual table of books published during 1887, we append a few remarks on the figures as compared with those of 1886. The total number is not far from 500 in excess of the books of last year. Theology shows an increase of 60 or 70 on the last return, more than 100 educational works over the product of 1886, while in juvenile works the increase is less marked. Novels keep up to their average of more than 2 per diem, Sundays included. Politico-economical books are less in number than usual, which is also the case in the department of arts and sciences, which includes illustrated volumes. In voyages, exploration, and books descriptive of countries, we find about 50 new books recorded more than for 1886, while in history and biography there is a notable rise in the issue of new works—over 100. Poetry and the drama are about equally represented with last year. In medicine and surgery, in belles-lettres and essays, as also in miscellaneous publications, our table shows a slight increase of production.

Analytical Table of Books Published in 1887.

Subjects.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total of Books on each Subject for the Year.	
Theology, sermons, biblical, &c.	*35	46	43	50	61	37	40	45	41	82	68	132	680	
	†11	11	16	15	9	15	8	5	6	9	8	22	135	815
Educational, classical, and philological	*21	55	32	54	64	43	40	44	41	39	57	92	582	
	† 2	10	4	13	11	8	10	9	6	9	9	11	102	684
Juvenile works and tales	* 4	10	3	13	20	10	9	8	11	110	148	93	439	
	† 2	—	1	3	4	1	6	3	2	35	26	17	100	539
Novels, tales, and other fiction	*13	63	42	90	61	66	52	72	62	67	67	107	762	
	† 6	20	9	11	35	26	28	16	15	27	14	21	228	990
Law, jurisprudence, &c.	* 9	12	3	3	12	6	6	—	12	3	6	1	73	
	† 3	9	—	—	6	15	3	3	3	—	3	5	49	122
Political and social economy, trade and commerce	* 5	17	2	11	21	5	8	8	1	7	12	16	113	
	† 1	2	—	4	2	2	1	—	—	6	1	6	25	138
Arts, science, and illustrated works	* 8	9	5	5	12	11	16	11	6	1	15	16	115	
	† 1	11	3	2	9	4	2	3	3	3	9	13	63	178
Voyages, travels, and geographical research...............	* 4	14	8	15	14	31	15	16	14	29	31	36	227	
	†—	3	2	9	4	8	11	13	4	3	5	6	68	295
History, biography, &c.	*16	26	24	44	41	41	31	22	16	33	39	61	394	
	† 3	1	3	9	5	6	8	1	6	3	8	18	71	465
Poetry and the drama	* 3	3	3	4	3	9	4	4	6	7	18	18	82	
	† 1	3	4	5	3	5	1	7	2	3	5	5	44	126
Year - books and serials in volumes	*27	38	14	27	11	14	9	13	5	25	31	88	302	
	†—	—	—	—	—	—	—	—	—	—	—	—	—	302
Medicine, surgery, &c.	*—	12	6	10	14	16	9	11	12	7	17	19	133	
	† 5	4	1	7	10	6	5	9	7	6	12	5	77	210
Belles-lettres, essays, monographs, &c.	* 7	6	10	11	13	14	7	5	9	9	23	26	140	
	† 7	13	13	28	14	24	16	14	16	25	26	39	235	375
Miscellaneous, including pamphlets, not sermons............	*11	36	29	25	30	31	27	23	12	48	35	61	368	
	† 8	7	9	9	5	6	4	5	1	5	8	12	79	447
	213	441	289	477	494	460	376	370	319	601	700	946		5,686

* New books. † New editions.

"The analytical table is divided into fourteen classes; also new books and new editions.

Divisions.	1886.		1887.	
	New Books.	New Editions.	New Books.	New Editions.
Theology, sermons, biblical, &c.	616	136	680	135
Educational, classical, and philological	458	114	582	102
Juvenile works and tales	390	55	439	100
Novels, tales, and other fiction	755	214	762	228
Law, jurisprudence, &c.	18	15	73	49
Political and social economy, trade and commerce	214	32	113	25
Arts, sciences, and illustrated works	132	46	115	63
Voyages, travels, geographical research	178	43	227	68
History, biography, &c.	282	68	394	71
Poetry and the drama	60	33	82	44
Year-books and serials in volumes	291	3	302	—
Medicine, surgery, &c.	114	57	133	77
Belles-lettres, essays, monographs, &c.	128	351	140	235
Miscellaneous, including pamphlets, not sermons	348	59	368	79
	3,984	1,226	4,410	1,276
	5,210		5,686	

XI.—*American Literature in* 1886 *and* 1887.

THE following is taken from the Publishers' Circular of 15th March, 1888:—

"American Book Statistics. Last year's output of books fell short of that of 1886, which was the largest in the annals of literature. The following table shows the number of entries made in the two years in *The Publishers' Weekly*:—

	1886.	1887.
Fiction	1,080	1,022
Juvenile books	458	487
Law	469	438
Theology and religion	377	353
Education, language	275	283
Literary, history, and miscellany	388	251
Poetry and the drama	220	221
Biography, memoirs	155	201
Description, travel	159	180
Fine art and illustrated books	151	175
Medical science, hygiene	177	171
History	182	157
Political and social science	174	143
Useful arts	112	123
Physical and mathematical science	148	76
Domestic and rural	46	61
Sports and amusements	70	48
Humour and satire	17	26
Mental and moral philosophy	18	21
Total	4,676	4,437

XII.—*The World's Big Ports.*

We extract the following from the *South Wales Daily News* of 7th March, 1888. The contribution, it is understood, is from the pen of Mr. Turner, a member of this Society:—

"The following statistics have been carefully culled from the consular reports and from other authorities. They may not be exact to a fraction, but are, comparatively and relatively, safe and reliable. The ten ports are selected as being those which have more than 5 millions of registered tonnage entered inwards and cleared outwards in one year. This tonnage comprises, as far as can be ascertained, all vessels employed in the foreign going and colonial trades, carrying both cargo and ballast. The coasting trade is excluded, because it merely indicates the business which any particular nation has with itself. Besides, some countries keep no complete records of this branch of commerce at all. On these lines, then, the following table has been constructed:—

Year.	Status.	Port.	Tonnage.	Increase per Cent. in Fifteen Years.
1887	1st	London	12,165,326	About 46
'86-7	2nd	New York	11,886,801	„ 94
'87	3rd	Liverpool	9,944,918	„ 16
'86	4th	Marseilles	8,376,871	„ 102
„	5th	Hamburg	7,578,837	„ 86
1887	6th	Cardiff	7,250,376	„ 152
'86	7th	Tyne	6,995,501	„ 46
„	8th	Antwerp	6,801,890	„ 75
„	9th	Genoa	5,406,769	„ 170
„	10th	Bilbao	5,274,452	„ 427
		Average increase per cent.		About 79

"With the exception of Cardiff, the British ports do not seem to have kept pace, in a percentage point of view, with any of the others. The American city of New York bids fair to be the leading port of the world very soon. Of course, when values are considered the two big English emporia are far ahead. In 1886 the value of the imports and exports was—at London, 208,589,692*l.*; at Liverpool, 184,974,608*l.*; and at New York, 153,592,350*l.* All other ports are considerably below the cental limit. The only exception, perhaps, is Hamburg, which for *all* goods, in and out, was far above 100 million £ sterling; but for those seaborne only the sum was about 90 million £ sterling. The increase of tonnage at Bilbao is phenomenal. It consists almost solely of iron ore, coal, and ballast. The ports of the Tyne and Cardiff principally export coal, and they have small values attached to their trades. It is difficult to get at the exact deadweight of cargo carried into or out of foreign ports; but it may be taken as pretty near the truth that, for cargo imported, London is first, and New York second; whereas in the export of mere weight of cargo New York is first and Cardiff second. The race is not always to the swift, for in this instance the heavy weights stand to win. What will the position be ten years hence? Evidently our merchants must look to their laurels, for the foreigner is pressing severely on their skirts in this port 'race for supremacy.'

"There is another class of port which deserves notice as well in this connection. They do not import cargoes for home consumption and manufactures, nor export their own country's produce to any extent. They are, however, represented by surprisingly large tonnage. Of such are the following:—

Year.	Port.	Tonnage Entered and Cleared in the Foreign Trade.	Increase per Cent. in Fifteen Years.
1886....................	Hong Kong	9,080,390	143
"	Malta........................	8,884,059	109
"	Gibraltar	8,609,730	120
"	Port Said	5,767,656	396
"	Constantinople	5,195,242	Nil

"These ports are above the five million ton limit. The trade of Hong Kong is merely a transhipment one. The others are mostly 'ports of call' for orders or for 'bunkering.' Port Said, of course, is simply the index of business done in the Suez Canal. The increase there is also of enormous extent. Fortunately for us, the bulk of the business is done by British vessels. Reverting, however, to the fact that our home ports are not increasing (with a Welsh exception) at the same ratio as those of certain foreign countries, it is of importance to sift out the cause or causes. McCulloch says the reasons for the decrease of the Dutch ports early in the last century were:—

"1.—The growth of commerce in other countries.

"2.—The weight of taxation at home.

"The subject is one for grave consideration, both by statesmen and the men of commerce. In the meantime the best information should be sought out, in order to cast light upon the subject. A step in advance was taken last year by getting the new series of reports from consuls. With regard to two points they might be very materially improved. These are: First, the returns regarding shipping should be uniform for all countries, containing divisions of trade, thus: foreign and coasting separately, subdivided into cargo and ballast vessels, British and other national, steam and sailing, entered and cleared; second, the values of imports and exports in detail, and from or to certain countries. All consular accounts being thus on one basis, the home merchant could make out comparative tables himself, and ascertain more clearly where the competition with his business abroad lies.

"A more cheerful aspect relative to the question under notice is exhibited in the advance of the British mercantile steam fleet. The figures are obtained from the latest parliamentary return, viz., 'The Progress of British Merchant Shipping,' which also gives tables of foreign country ships. The table of foreign ships is only brought down to 1885, and those of Russia and Greece are not inserted for that year at all. Adding, however, the tonnage of the previous year to 1885, and assessing those omitted for 1870, by estimate the approximate result (for steamers only) is as follows :—

	In 1870. Registered Tons.	In 1885. Registered Tons.	Increase per Cent.
Foreign	750,000	2,000,000	166
Lake and river steamers in United States	882,551	1,308,511	48
Combined	1,632,551	3,308,511	102
British	1,202,134	4,293,115	257
Total	2,834,685	7,601,626	168

"The increase in British steamers is more than double that of the foreigner. Curiously enough, the increase at the ten 'big' ports, given above, is, on the average, just under half of that shown by the 'registered' steam tonnage. Of course, we know sailing ships have decreased, but then it must be remembered that a steamer does three to four times the work of a sailer. The fact of the increase of trade in a recent similar period being hardly equal to half of the steam tonnage advance on the register, should make shipowners pause and count the cost and risk of building more boats at the present juncture.

"Plainly two inferences are pending to these facts: That the 'big' ports are becoming bigger still; and that the screw propeller is projecting us on a career of cosmopolitanism which may save the nations from many a bitter feud. The dictum of the Regius Professor of Cambridge may yet prove true, and the British Empire be federated politically through the peaceful agencies of commerce."

XIII.—*Notes on Economical and Statistical Works.*

A Treatise on Money and Essays on Present Monetary Problems. By J. Shield Nicholson, Professor of Commercial and Political Economy and Mercantile Law in the University of Edinburgh. Edinburgh and London: William Blackwood and Sons, 1888.

Professor Nicholson's book is divided into two parts. In the first he reprints (with additions and corrections) an essay on Money, which he contributed to the *Co-operative Wholesale Society's Annual* (*cf.* preface); and in this essay he attempts to "recast the general principles of monetary science." We can congratulate him most heartily upon the success of his attempt. He has contrived to compress within a comparatively small compass an adequate discussion of the main outlines of monetary theory. He has expressed himself with admirable clearness and candour; and the concluding chapters (v—viii) in which he discusses the relation of the quantity of money to general prices—in the first instance simplifying and isolating the question by dismissing from consideration the qualifying influences, and then successively reintroducing these influences, and illustrating each stage of the theory by appropriate practical examples—seem to us to contain the best exposition of the subject that we remember to have seen.

In Part II he passes from comparatively simple to complex and difficult questions; and he will scarcely quarrel with us for saying that he exchanges the garb of the impartial exponent for that of the professed bimetallist advocate. Even here however it is but common justice to add that with few exceptions he exhibits throughout conspicuous moderation and fairness. We do not think indeed that on p. 213 he has entirely succeeded in entering into the views of those who, as he says, "seek to connect the depression of the last twelve years with improved communication and overproduction." For if the present effects of the improved communication and production be greater in degree than were the contemporaneous effects of the improvements—which may not indeed have exercised their full influence until recently—of the era of the Australian discoveries—then the contention is not so palpably absurd as he here represents. Nor, we imagine, would the supporters of this view accept unreservedly the implied conclusion contained in his remark (p. 335) that their theory is "only adequate to explain directly the relative fall" of things affected by improvements in production compared with things to which the improved "processes do not apply;" for it is of the essence of their contention—be it right or be it wrong—that a fall in prices has not occurred in the case of nations, of commodities, or of services which are not affected by these improved processes of production. Again, when on p. 237 he rightly points out that the inconvenience of fluctuations in exchange cannot be avoided, without some loss, by throwing the risk on the banks, he does not notice that the same inconvenience may exist in trade with a country that has an inconvertible currency; and yet it is this, we imagine, that constitutes the chief strength of the argument he is combating.

These points, however, are somewhat nice, and we cannot raise any serious complaint against the fairness of his discussions generally. Besides treating bimetallism, he deals in Part II with various aspects of monetary questions. We may describe the various papers in this part in their order. In the first an interesting and, as it seems to us, successful and discriminating attempt is made to rehabilitate the financial reputation of John Law. "He was," Professor Nicholson remarks (p. 149), "a man of excellent theories," but "apt to underrate all practical difficulties." "The great mistake he made was the attempt to force the growth of generations into months with the vapour and heat of speculation," (p. 161). In another essay on "One-pound Notes" (*cf.* also p. 92) a method is suggested for withdrawing the light gold at present in circulation, without imposing any pecuniary burden on the nation or the present holders, by issuing one-pound notes in England. In the third essay he passes to bimetallic subjects, and traces in somewhat the same way as Cairnes has done the effect of great discoveries of the precious metals. In the fourth he endeavours to show that bimetallism is both advantageous and practicable, and in the fifth that it is also moral. He lays down the conditions which bimetallism must satisfy, although we do not think that he has entirely succeeded in showing that his scheme will satisfy them. He restates with much force the characteristic arguments of modern bimetallists, and he adds many a suggestive remark. He candidly recognises (pp. 233, 246, and 273) that the chief benefit he seeks to obtain would be, not an increase in prices, but the arrest, or more probably the retardation, of a gradual fall, and also an increased stability; he argues (p. 228) that it is possible that all the benefit of the fall has not reached the consumer because it has been partly intercepted by the middleman, and also that the non-confirmation of what he supposes was Bagehot's prophecy that silver prices would rise in India, is due to the greater susceptibility of gold than silver prices (*cf.* pp. 115, and 356, &c.) and the comparative absence of credit and prevalence of custom in the East. In the seventh essay he reprints a valuable paper which appeared in the March number of this *Journal* for last year, "A New Statistical Method of Measuring Variations in the Value of the Monetary Standard;" and in the concluding essay, to which—and especially the latter part—he directs (p. vii) special attention, he exhaustively examines the causes of the movements in general prices, and describes, as Mr. Giffen had previously done, the manner in which even now the quantity of money—indirect and circuitous though the method of operation be—affects general prices (*cf.* also pp. 92—94). This essay contains, he believes, the "first complete statement of the various modes in which gold prices, silver prices, and the ratio between gold and silver may theoretically interact, with the consequent effects on international trade;" and in it he points out that a fall in gold prices may be the "direct effect" of a "prior depreciation in silver."

In noticing this book in a way befitting the merit of the author, we may be allowed to add on behalf of the older economists and statisticians an expression of regret that so many young English economists like Professor Nicholson have fallen victims to the bimetallic agitation, and have rushed into the discussion of the many *pros* and *cons* which bimetallists have enlarged upon, without going back to the older literature of political economy in this country. The contention of the older economists from Locke to Lord Liverpool was that bimetallism was *impossible;* that Governments might pass laws to coin gold and silver at a certain ratio, and enact that all past debts were to be payable in either metal at that ratio, but that the market ratio would never at any time except by accident be the same, and that the practice of the market would be to fix upon one or the other metal as the principal, and to leave the other to pass as merchandise at the changing market rate. Universal experience up to Lord Liverpool's time proved that the older economists were right; at least that under the rule of each nation making a ratio for itself the market ratio was never the same, or hardly ever the same, as the legal ratio; and consequently that bimetallism was impracticable if each nation acted for itself alone.

Now it is contended by bimetallists that although one nation is not strong enough to make bimetallism practicable, yet all nations may combine to do so by a general agreement. In favour of this view, however, they have absolutely no experience to go upon, because a universal agreement has never been tried, while the mathematical reasoning of Locke, and the experience of markets generally, is, in the view of the older school of English economists, entirely against the contention. According to this reasoning and experience, the result would be entirely the same whether many or all nations or one only adopted a bimetallic law. The one metal or the other in each nation would become the principal metal by the custom of the market; the other metal would pass as "monetary merchandise" at a varying premium or discount; the legal ratio would never be the market ratio except by accident. In ordinary circumstances the market ratio would probably be a steady one, but in extraordinary circumstances as in the first half of the 17th century, and in the last twenty years, there would be great and rapid fluctuations, which the existence of a legal ratio would not prevent. The only argument from experience which bimetallists have advanced against this contention is the fact that from 1800 to 1873, the market ratio of Western Europe approximated closely to the legal ratio of France; but approximation is not identity, whereas identity is required to prove the bimetallic argument, and it still remains true that from 1600 to 1800, in which bimetallic laws equally prevailed as between 1800 and 1873, there were frequent and wide fluctuations in the market rates between gold and silver, entailing very often a change in the legal ratio which Governments vainly attempted to maintain. All this hard part of the discussion bimetallists have steadily evaded, but it is of the essence of the whole matter, and probably it will now come to the front, as the presentation of the Report of the Royal Commission on Gold and Silver seems likely enough to be the beginning of a new agitation which will force politicians to pay it some attention.

It is so far satisfactory that Professor Nicholson and other English economists who have been victims of the bimetallic agitation, rather discard many of the Cernuschian arguments which excited so much disgust some years ago; still their writings are not quite free from the taint of exaggerating the effects of currency changes, and of attaching so much importance to the amount of currency as to lead up logically to a conclusion in favour of inconvertible paper. The company into which they have fallen is not a good one.

The Silver Pound and England's Monetary Policy since the Restoration together with the History of the Guinea illustrated by contemporary documents. By S. Dana Horton. London: Macmillan and Co., 1887.

The chief interest and importance of this volume undoubtedly lies in the historical matter which it contains. The other chapters in the book (i—iv, viii—x)—with perhaps a few exceptions, such as the contention (pp. 42, and xvii) that the "outlawry," as Mr. Horton terms it (p. 19), of silver is partly due to the intrusion of notions of metrology into the sphere of monetary practice—reproduce the familiar bimetallic arguments. Although we are so far from underrating the strength and the copiousness of those arguments—as they are now presented in some quarters—that we believe it to be quite conceivable that the meeting of the Bimetallic League at Manchester may open a campaign, which may, from the plausible and abstruse nature of its propaganda, exercise an influence on electoral contests, yet we do not think that the form in which they are set forth by Mr. Horton is at all convincing or attractive. It is useless indeed to quarrel with the harshness and obscurity of his literary style, for it is evident that he cannot now—even supposing he is inclined to do so—effect his escape from its trammels. But we may content ourselves with entering once for all a protest against it, and with recording our conviction that the reader who relaxes his attention for a single moment will experience very considerable difficulty in resuming the thread of the argument. Nor again shall we spend any time in arguing against the practice into which Mr. Horton so frequently lapses of making use of a new nomenclature (*cf.* p. xi). The distinction for instance which he establishes in the first chapter between what he calls the "National Instrument of Valuation," the "Standard of Desiderata," and the "Greater Standard of Value," appears to us to be of some use on account of the discussion it entails, but to introduce a change of names the cumbrousness of which far outweighs any advantages that may be thought to attach to it. But here again it would be waste of time to do more than utter a complaint; for on this point, as on others, Mr. Horton is manifestly—if we may say so—incorrigible. When however all this has been said, we must still acknowledge that he does bring to bear upon his subject a great amount of information industriously acquired, an enthusiasm which is the result of evident and reasoned conviction, and a tolerably acute appreciation of the strong points of an argument. In some respects indeed he affords an example of the change which has taken place in the tone and temper of bimetallist advocates. He emphasises (p. xi) the "peculiar need of securing precision—and, especially, of guarding against overstatement." He declares (p. 15) that bimetallism is primarily a demand for a "stable standard of value;" and he casts aside (p. 21), from considerations of "scientific precision," the misleading phrases of a "scarcity of gold" or a "gold-famine." But on the other hand the impassioned language with which he describes the monetary policy of England, the inspirer, as he declares (p. 29)—through a line of succession commencing with Lord Liverpool and passing through T. G. Hoffmann to Adolph Soetbeer—of the "anti-silver movement" of Germany, supplies a reminder—not perhaps unneeded—that bimetallism has not yet entirely freed itself from the extravagances of its early days.

The main interest, however, of the book is, as we have said, and as the author himself claims (p. xi), historical. It is an attempt to prove the truth of the seeming paradox that the English monetary system was "for centuries *a Single and Double Standard at the same time*" (*cf.* p. xii); and that therefore on the one hand the conclusions to which Lord Liverpool's treatise—the "Magna Charta Monetaria," as Mr. Horton fancifully styles it (p. 68)—gave authority and contributed to give practical effect, were an erroneous inference from misinterpreted facts, and that on the other bimetallism would be nothing more or less than a return to the old monetary policy of England sanctioned by long and unbroken usage. The paradox to which we have alluded is resolved in the Introduction, where the different meanings of the term standard are explained, and it is accordingly in this Introduction that the key of the whole book is contained. For what Mr. Horton endeavours to show is this—that during the period from the Restoration down to the younger Lord Liverpool's reforms, there was both a single and a double standard—a single standard in the sense of a measure of value or an unit of coinage consisting of silver—a double standard in the sense of full legal tender, consisting not only of silver but also of gold rated by the Government in terms of silver (pp. 47, 69). He begins this historical survey in chapter v. with the re-coinage of 1696; and argues that the elder Lord Liverpool—the author of the famous treatise—had no title which would bear examination to appeal for support of his doctrines to the evidence either of the re-coinage itself or of the language employed by its chief agents; for, as he maintains (p. 69), the system which Locke and Newton and Somers and Montague found, and the system which they endeavoured to guarantee by wise legislation, was exactly the system which we have just described. He ingeniously contends (p. 73), but without, we think, the slightest real success, that the language of Locke—so often cited as a piece of monometallist evidence—is reconcilable with the support of such a system, and must be interpreted in the light of a context supplied by his other writings and his practical action. From 1666 to 1798 the coinage of silver—like that of gold even now—was "gratuitous and free," and Locke, Mr. Horton argues, never evinces feelings of rebellion against this. On this point Mr. Horton quotes (p. 77) with effect from a report which Locke signed and, as he thinks, wrote, indicating a belief in the principle of one metal as a measure, but of two as full legal tender. Nor in his opinion is the particular passage so often cited by monometallists incompatible with this view; and in the same way Newton, who is claimed by Jevons (*cf.* pp. 89 and 90) as a monometallist, may with reason be held to have really adopted a similar attitude. Mr. Horton quotes (p. 88) from reports "signed" by him "as an officer of the Mint" regulating the rating of gold in terms of silver; and maintains (p. 89) that his famous dictum "Nolumus leges Angliæ mutari," really applies to the dual standard then practically existent. Mr. Horton, however, fails altogether to notice that a qualified approval of rating one metal in the other from time to time according to the changing market value, such as Locke seemed to give, this having been the universal practice of Governments up to Locke's time, is a very different thing from an approval of modern bimetallism, which rests upon the idea condemned by Locke that the legal ratio makes the market ratio. Mr. Horton next traces (ch. vi) the successive steps by which the silver pound was degraded from its position as the unit of coinage and superseded by gold; and he shows (p. 96) how the action of the Government, previously to the era of the re-coinage itself, brought about the monetary disorder by neglecting not merely the condition of the silver coinage but also that of the gold. It "let the gold go up" in nominal value as well as "the silver go down" in intrinsic value (p. 99). And a similar result was produced (*cf.* pp. 105, 118) after the re-coinage by the practice of Government offices, which continued to overrate the gold, and thus supplied the authoritative influence which kept it above its market rate, although the aim of the promoters of the re-coinage itself was essentially (*cf.* p. 111) to keep the rating of the guinea in harmony with its silver price, to preserve in fact the system in vogue, and to prevent it from falling once more into disorder and abuse. The "seed" however was "sown on stony ground," and the guinea remained above its bullion value. Gold poured into the country, and robbed silver of the ascendancy in the currency, and the "coining of silver" "slackened and finally ceased" (*cf.* p. 118). In 1717 indeed the guinea was reduced; but the reduction came too late; and the way had already been paved for a new monetary system. The writings of Lord Liverpool—inaccurate and misleading as Mr. Horton terms them in a very severe criticism, in which it is quite impossible to agree with him, Lord Liverpool's book being in every way admirable (ch. vii), and confused and confusing as he charges (p. 131) them with being on the different uses of the term standard—contributed to bring about the change; but even the provision of 1774 (when the re-coinage of gold was effected) that a tender of silver above 25*l.* to be binding must make up the proper weight, and Lord Liverpool's advocacy of the extension of this provision to the lower limit of 2*l.*, were primarily intended to meet and remedy the evils of the light silver in circulation, and may perhaps be said—like the Act of 1816 (*cf.* p. 159)—to have been only secondarily and accidentally monometallic. Lord Liverpool's advice may be summarised under three main heads: (1) to replace a silver unit with a gold unit; (2) to secure to gold the position not only of chief, but of sole legal tender; and (3) to oust silver entirely from its position as full legal tender. These proposals however were not brought into full operation until the main reason for their adoption had passed away in the rise of the silver price of gold; and the terms of the Act of 1816 show that the details laid down by Lord Liverpool himself were not observed (*cf.* p. 157). Even under the Act the free coinage of silver was not prevented, but only needed the issue of a proclamation before it became an actual fact; and under the Bank Charter Act of 1844, Mr. Horton points out that silver is so far recognised (*cf.* p. 190), that the Bank can hold in this metal part of the bullion and coin to meet its notes. We have endeavoured thus to trace the main outlines of the historical argument contained in the book, and we can only conclude by saying that it is supported by numerous documents—in some cases freshly discovered by Mr. Horton himself—illustrating the history of the guinea; and that each successive point is carefully and skilfully elaborated. It is most unlikely, however, to reverse the view held by English economists generally, that Lord Liverpool only carried out Locke's reasoning to its logical conclusion. Step by step the double legal tender was most deliberately abandoned in England, because it was found impossible, and nothing which Mr. Horton urges affects this broad conclusion.

The Reign of Queen Victoria, a Survey of Fifty Years of Progress. Edited by Thomas Humphry Ward. London: Smith, Elder, & Co., 1887.

In the great and varied mass of jubilee literature to which the celebrations of last year gave rise, the two bulky volumes before us occupy a conspicuous—and, as we venture to think, a durable—position. The record of fifty years of progress in the different departments of life embraced by these volumes would be a tempting subject to almost any writer; and when the list of writers, even of one only of the two volumes, includes the names of such authorities on their respective topics as Lord Wolseley on the Army, Lord Justice Bowen on the Administration of the Law, Mr. Leonard Courtney on Finance, and the late Sir Henry Maine on India, we may be sure that the comparatively narrow limits of space to which they are confined will not prevent them from supplying the reader, both now and in the future, with a valuable and instructive digest of their knowledge and experience. It is, it is true, proverbially difficult for writers to place in their true perspective the events of their own times, and it may be that the Victorian era will be estimated by posterity in a somewhat different manner from that in which it is here presented. It may be that some points on which emphasis is here placed will be thrown into the background, and that others which are now in the shade will be brought into the light. But at any rate the names of the contributors to this book are an adequate guarantee that the accounts they give are as full and as fair as contemporary study can supply.

The editor, in a brief introduction, describes the general character of the period of which the book treats. "The fifty years which are surveyed in these volumes have been," he remarks, "years of change so great and so far-reaching that scarcely any other half century of the world's history can be compared to them." An enormous increase of population, concentrating itself on the one hand in the towns, and diffusing itself on the other in the colonies, a "still more remarkable" increase of wealth and a development of trade both internal and foreign, and an extension and improvement of knowledge both theoretic and practical, are some of its most marked features. In the next section he proceeds to review the legislation of the reign, and shows (p. 25) "how completely the framework of our national life has been changed within the space of half a century" by acts affecting "either the distribution of political power, or the system of local government, or the land system, or national education, or the protection of the poorer classes and of women and children." In a third section the review of domestic policy finds its fitting complement in a survey of foreign policy; and here Mr. Ward sums up the matter in his remark (p. 73) that "England has still foreign interests of immense weight and importance, but they are no longer concerned as closely as they were with the affairs of Europe." Sir William Anson next discusses with thorough knowledge, though perhaps also with a slightly pessimistic colouring, the history of constitutional development during the reign; and points out how the "old machinery acts under the new motive power which has been applied to it" by democratic change. The subject of the Army is handled by Lord Wolseley—with a special supplement on the Ordnance Survey by Sir Charles Wilson; and that of the Navy has been intrusted to Lord Brassey, who has invited and obtained assistance from different authorities on particular points. Sir Charles Bowen contributes a terse and brilliant summary of the changes in the administration of the law, which consist "for the most part" however, he argues (p. 281) "of the history of countless changes of detail, many of which must remain absolutely unintelligible to the greater portion of the public." The next topic, that of Finance, is of perhaps more immediate interest to the readers of this *Journal;* and the fact that it has been undertaken by Mr. Courtney is sufficient guarantee of the ability and thoroughness of the treatment it has received. He shows how at the commencement of the reign deficits were a normal incident in financial administration, and industry was fettered by multitudinous taxes. In fact, we may fairly say that the improvement in finance is one of the chief characteristics of the period, and the reforms of Sir Robert Peel and Mr. Gladstone are perhaps more far reaching in their consequences than many changes to which a superficial view might attach greater importance. "The story of national finance," at least, whatever may be the case with local finance, and however "unpromising" be some of the "circumstances marking its close," is "a record of great success." Mr. Courtney is followed by Dr. Hatch, who discusses the history of religion and the churches, and reaches a somewhat pessimistic conclusion. The editor himself treats next of colonial policy and progress, and Sir Henry Maine of India. In the former case, "what once was but the language of showy epigram is now the simple record of historic fact;" and "a new world has been called into existence under British auspices and by British energy" (*cf.* p. 459). In the latter grave problems confront the Indian Government, both in the sphere of politics and in that of economics; but they are scarcely graver or more formidable than those which have been already faced and overcome. "In no country will there be probably a severer pressure of population on food" (*cf.* p. 518), and in no country is the danger more real than that involved in India in "the perpetual proximity of a possible enemy" (*cf.* p. 523). The subject of Ireland is treated with admirable and impartial candour by Sir Richard Blennerhasset in the concluding essay of the volume, and he reaches the encouraging—though not unwarrantable—conclusion, that "the progress of Ireland"—as illustrated by the growth of revenue, by the increase of deposits in the savings banks, by the improvements in the dwellings and education of the people—"has been great," and that "the elements of future progress are there."

The second and concluding volume commences with a series of essays of an economic and statistical complexion. Mr. Giffen in his article on the growth and distribution of wealth, summarily describes the various links in the great chain of evidence which tends to prove—beyond effectual dispute—a growing diffusion of augmented wealth. Mr. Mundella and Mr. Howell discuss the interesting question of industrial association—whether it be exhibited in the passing of factory legislation, in the growth of trades unions, and friendly, building, and co-operative societies, or in the substitution of conciliatory methods for industrial strife. The editor himself treats of that development of locomotion and transport which, both internally and externally, is one of the greatest, if not the very greatest, economic instrument of change of the times. Sir James Caird contributes an essay on agriculture, full of instruction and interest; and two of the industries in which England has, under conditions apparently the most opposite, won equal success—the cotton and iron trades—are handled respectively by Mr. Slagg and Sir Lowthian Bell. The volume concludes with a series of essays on education, science, literature, and art. Mr. Matthew Arnold treats of primary and secondary education, and Mr. Fyffe of the Universities; Professor Huxley reviews the progress of science, and Mr. Brudenell Carter that of medicine and surgery. Literature is intrusted to Dr. Garnett, Art is handled by the editor himself, the Drama by Mr. William Archer, and Music by Mr. Walter Parratt. We should like to indicate the outlines of these different essays; but the limits of space forbid, and we must conclude with remarking that there is only one considerable defect that the volume exhibits, and that is the want of an index. It is manifestly intended for reference, and yet that indispensable aid to easy and rapid reference is lacking, and the marginal analyses, excellent as they are, are by no means an efficient substitute. We hope, however, that when the book passes into future editions, as we believe it probably will, this want may be supplied.

The Anthropometric Manual of Amherst College (1861-62—1886-87 inclusive). Prepared by Dr. E. Hitchcock, assisted by Dr. H. H. Seelve. Amherst: J. E. Williams, 1887.

This little book contains some tables based upon the records of the department of Physical Education and Hygiene in Amherst College during the quarter of a century or so elapsing between 1861 and 1887. Since the former of these two years it has apparently been the invariable practice to secure from every student in the college particulars of the eight items of age, weight, height, chest girth, arm girth, forearm girth, lung capacity, and pull up; and in 1882 these items were replaced and supplemented by others of a more elaborate and methodised character. The tables may then be regarded as affording, in the language of the authors of this manual, an accurate idea of the "typical student," and also such an approximate estimate of the "typical man" that it may be considered superior to those afforded by soldiers, sailors, prisoners, and "others directly under the control of governments." The tables certainly seem to have been prepared with great industry and care, and are of an interesting character. In the first there is a series of measurements and tests of men who are of a certain height. The second, which of all the tables gives the "most comprehensive" results, supplies a general average of the condition of a student in respect of all the items we have enumerated above. The third table is "based entirely upon the element of age," the fourth is "prepared by grouping together the items, and arranging them by their simple numerical quantities;" and in a subsequent part of the manual the "detailed method of securing" the various statistics is described. The general results, it may be added, of the second and most comprehensive table, which is based on the measurements of nearly 8,000 individuals, varying in age from 16 to 26, show among other points that the average weight has been 134 lbs., the average height 5 ft. 9 in., the average girth of the chest 3 feet, with the average lung capacity 242 cubic inches.

Le Logement de l'ouvrier et du pauvre. Par Arthur Raffalovich. Paris: Guillaumin et Cie., 1887.

This is an interesting and valuable book on an important question. As M. Raffalovich himself remarks (p. 49), in England at least the question has been recently discussed in all its bearings, and the consideration of problems connected with pauperism is the order of the day. This book is a weighty contribution to the literature of the subject. The author has collected a mass of opinion and fact from the United States of America, from England, from France, from Germany, and from Belgium. He has, so far as we can judge, exercised great care in the collection of this material, and he accepts for example (p. 11) Mr. Mulhall's statistics with caution. He has referred to the best authorities, and has, we believe, verified his references. He has indeed discussed the question in all its bearings—the facts of the situation in each of the five countries with which he deals, and the character and results of legislative and private efforts to cope with the problem. He inclines himself—and we are bound to add that the facts he adduces can be said to lead to no other conclusion—to the belief that the remedy must be found in the main in private and associative effort, and that legislation must be negative rather than positive, preventive rather than curative.

He commences his investigations with the United States of America, where the belief in the sanctity of property is extreme, but the pressure of public opinion on the owners of property is also considerable. He shows how the density of population which is found in New York exceeds that of London itself, and is undoubtedly due in a large degree to its insular position. The housing of the poor in that city is then a perplexing question, and although it is, as it seems, the fresh immigrants who chiefly occupy the bad dwellings, and although also great progress has been made since 1866, yet the question is not by any means solved. The Board of Health, however, which was appointed in the year we have last mentioned, has extensive powers; and in New York we find private attempts such as that of the Improved Dwellings Association and of Miss Collins (the American Miss Octavia Hill, as M. Raffalovich calls her), just as at Brooklyn we find the efforts of Mr. White. Similar attempts have met with extraordinary success in Philadelphia; but this town presents a striking contrast to New York. The geographical conditions of space are more favourable, the workmen can more easily live at a distance from their work, and are owners of houses to a larger degree. The ground-rent of the English system becomes merely an annual quit-rent, the workmen can sink their capital in a house without the fear of losing it at the end of a lease, and the building associations supply them with the necessary funds.

Mr. Raffalovich passes from America to England, and devotes a large portion of his book to the examination of the question as it presents itself here. He draws a picture of the housing of the poor in London with the details of which we are only too familiar. He notices that progress has undoubtedly been made in the matter, and that at the heart of the difficulty lies the poverty of the tenants themselves. He gives a clear and complete account of legislation on the subject, and of notable private ventures, such as that of Sir Sydney Waterlow and the Improved Industrial Dwellings Company, and of Miss Octavia Hill, to whom he devotes a separate chapter. He remarks that despite of cheap trains—although on this point we might subject his remarks to some qualification—workmen are disinclined to live in the suburbs rather than in the centre of the town, and he calls special attention to one influence tending in this direction—their desire to avoid occupying in travelling the leisure they can enjoy in the company of their family. He examines the report of the recent Royal Commission on the Housing of the Poor, and also the report—which he rightly characterises as excellent—of the committee appointed to inquire into the Condition of the Bristol Poor. He devotes some attention to the condition of Edinburgh, of Dublin, and of Belfast, and reviews the general character and work of building societies and of the Mansion House Council.

Passing to France, we find that there is little legislation on the question; and that that legislation, here as in other countries, is practically inoperative. In France, as in England, and indeed as in all civilised and wealthy countries, there seems to be an irresistible attraction of population to the towns; and in the case of Paris the public works of the Second Empire have increased this influx. The provinces indeed in some of the means for dealing with the question are in advance of the metropolis, and the researches of M. du Mesnil and M. d'Haussonville have revealed a terrible picture of the state of affairs in Paris. But the remedy must be sought not so much in direct legislative intervention as in a multitude of such ameliorative agencies as self-help and prudent charity.

In Germany there is an absence of uniform and general legislation, but there are individual local regulations. The question was forced upon public attention by Huber, and has attracted the notice of more than one of the German socialists. The action of Herr Krupp at Essen and the arrangements at Mulhouse are notable instances—suggestive both of advantage and danger—of private and co-operative effort.

In Belgium, lastly, the question has come under the consideration of a special sub-committee of the commission appointed to inquire into the conditions of labour in the kingdom; and M. Raffalovich concludes the volume with a bibliography of recent literature upon the subject, both in Belgium and in the other countries of which he treats, in which the report of this commission occupies a conspicuous place.

Die Entwickelung der Viehzucht in Preussen von 1816 *bis* 1883. Von Dr. Emanuel Hauser. Jena: Gustav Fischer, 1887.

It has become a truism to remark that the work of German students is characterised by laborious research; but the full meaning of the truism can only be realised when we examine such a volume as that before us. It would be impossible within the necessary limits of our space to give any complete idea of the labour involved in the preparation of such a book; and it would be unjust to make the attempt. The author has conducted an investigation which may fairly be termed microscopic in character. He has collected a great mass of statistics and facts, and he has, so far as we can judge, brought to bear on these data an acute intelligence. He has in short, as it appears to us, exhausted his subject, and we can accord him no higher praise. He has utilised all the material that is properly available, and he has not neglected to indicate the sources of his information.

After acknowledging his indebtedness to Professor Conrad, the editor of the series of which this volume forms part, he proceeds in the first chapter to offer some general considerations upon his subject—the development in the rearing of cattle—and points out its importance, and its bearing upon contemporaneous thought and practice. In the second he discusses the methods of arriving at the numbers of cattle, and notices the authorities which are available for his purpose. In the third he considers what we may call the "absolute statistics" of the subject, and in the fourth he treats of the "relative statistics," of the proportion for instance of cattle to hundreds of inhabitants, of their proportion to the acreage of the soil, on its excellence or its agricultural management. He then considers the quality, the selling price, and the weight of the cattle themselves; and concludes the chapter by a discussion of Professor Lambl's theory of a decrease in the number of cattle in Europe. It is curious to find among the results of his investigations that the amount of flesh consumed per head in Old Prussia in 1883 exceeded the average of the century, although the number of cattle per head had declined. It is encouraging to observe that Dr. Hauser gives a favourable answer to the question—usually, as he says, answered in an unfavourable sense—whether the rearing of cattle is more effective now to meet the requirements of the human race than it was in the past. In the latter portion of the book he combines official statistics with other material, and he approximates more nearly, as he thinks, to useful and practical results. In fact, although, as he says, there are few, if any, general statistical data for the consumption, for example, of meat throughout Prussia—though there are data for the consumption in particular isolated towns—and although his treatment is necessarily discursive in character, and is difficult to summarise into general conclusions; yet he has certainly contrived by careful study and suitable arrangement to present a valuable treatise on a question of by no means inconsiderable importance and interest. We cannot, as we have said, criticise the details of his treatment; but its general character seems to us to deserve little else but unstinted praise. It is, as far as we can judge, honest and exhaustive; in a word, it is, in the best sense of the term, essentially German.

Publications of the American Economic Association. The Early History of the English Woollen Industry. By W. J. Ashley, M.A., Oxford. American Economic Association, September, 1887. 85 pp., 8vo.

Mr. Ashley divides his subject under the four heads: The Establishment of the Guild System, The First Immigration, The Rise of the Trading Class, The Growth of the Domestic System. We are told that guilds came into existence at first quite voluntarily, and that the banding together of the craftsmen was regarded as somewhat revolutionary; but these guilds needed royal authorisation, and in their early days the craftsmen were soon obliged to join the guild of their district. At the same time the craftsmen were not citizens or burgesses, and the free men of all the towns rigidly excluded them from all share in municipal government. The burghers also in their desire to retain such government in their own hands sought to obtain the monopoly of the sale of cloth. So far did this antagonism between weaver and burgess extend, that at one time in London the municipality succeeded in getting a charter suppressing for a time the weavers' guild. Amongst the enactments to regulate the sale of cloth were several regarding the sizes in which it should be exposed for sale; but the enforcement of such assize depended much upon the strength of the Government; once the king was bribed not to enforce it, and on another occasion it was relaxed in favour of foreign merchants. It was in consequence of the extension of the wool and cloth trade that in 1240 the association known as the Hanse of London was established, previous therefore to the establishment of the Teutonic Hanse. As far back as 1157 the Flemish wool buyers had a house in London, but it soon occurred to the English Government that by prohibiting the export of wool the seat of the manufacture of cloth might be established in England. This led Edward III to encourage the settlement in England of foreign clothmakers, who should teach the English weavers and dyers the arts still unknown to them. The importation of foreign cloths was then prohibited, the export of wool was limited, and no one was allowed to wear foreign made cloth. In the meanwhile confederations which we should now call rings were formed for not only raising the prices of cloth, but for restricting the output, and the members of such conspiracies were duly summoned and fined. This attempt at restriction of output had in London in the course of thirty years reduced the number of looms from 380 to 80 only. For a long time the English and foreign weavers were engaged in mutual bickerings, but in the end the English weavers succeeded in getting the foreigners to join their guild, without however getting them to contribute to the common funds. As the industry increased a trading class arose, and it seems to have been the aim of this body to get the monopoly of the sale of cloth into their hands. No dyer or weaver was allowed to finish cloth for sale, and there are records of punishment of such men for so doing. As far back as 1415 the Drapers Company numbered more than 100 members, but of the early history of this company, as well as of the traders generally, not much appears to be known. Like other similar bodies, the London drapers endeavoured to get the monopoly of the sale of cloth in London, and thus practically for England, and to that effect Bakewell Hall in Basinghall Street was made a cloth exchange; but Henry IV did not grant the London drapers their desires. Finally, by getting English cloth free into the Netherlands, by cause of the religious troubles in that country and further immigration of Flemish weavers to England under Elizabeth, the destruction of the Flemish industry was brought about, and England left in a supremacy she holds to this day. At this period a change was coming in the system of manufacture of cloth. The guilds broke down partly through confiscation of their property, and partly through their exclusiveness, which made it almost impossible for a poor man to become a member. This was the cause of the industry spreading in the country away from the towns, and thence began what is known as the domestic system of manufacture. It is interesting to note that as far back as 1350 weavers struck work when one of their fellows was illused by a master, and also that Edward IV passed an enactment against the truck system. Mr. Ashley shows a wonderful amount of research, and his labours do not merely enlighten us on the woollen trade, but throw a great deal of light on the trade relations and social conditions of the country during the times treated of.

Treasury Department. Wool and Manufactures of Wool. Special Report . . . . Prepared by the Chief of the Bureau of Statistics, Treasury Department. xciii + 231 pp., 8vo. Washington, 1887.

This publication may almost be termed a handbook. The characteristics of wool and its difference from hair are explained, the improvements in wool by domestic culture are described, and a few remarks made on the breeds of sheep. The English terms applied to sheep according to age or sex are given, and then follow several pages which describe very fully the difference between "Woollens" and "Worsteds," the numerous technical terms in use among wool growers, sorters, buyers, and manufacturers, and the names of the wools which are met with in the Chicago market. A short account of the history of the condition, growth, and progress of sheep raising, wool growing and woollen manufacture in the American colonies and the United States is also given, reference being made to the clip in other wool-producing countries. Finally, the various United States wool tariffs are described. There are several pages of diagrams illustrating the statistics of the wool trade and manufacture. The 231 pages which form the bulk of the volume are devoted to statistical tables dealing in fact with the wool trade of the world.

Abstract of the Foreign Commerce of Europe, Australasia, Asia, and Africa, 1873-85. No. 1. Prepared from Official Returns, and reduced to American Money, Weights, and Measures. 207 pp., 8vo. Washington, 1887.

This abstract is a publication by the United States Government resembling the statistical abstract for foreign countries published by our own Board of Trade. It contains tables of the annual exports and imports for the years named, arranged under the heads of countries. Under every country the returns are given, (1) whither and whence the exports and imports, which is again subdivided under native or foreign products, and (2) under the heading of articles classified. The returns are given for the most part in value, but when available returns for quantities are also given.

Hand Labor in Prisons. A Letter in response to an inquiry from His Excellency Oliver Ames, Governor of Massachusetts. By Carroll D. Wright. 19 pp., 8vo. Boston, 1887.

Mr. Wright has visited most of the penal establishments in the United States, and therefore speaks with authority. He states that the average age of the criminals in Massachusetts is 26, and he divides them into three classes. Six-eighths of these are short-term convicts, one-eighth are incorrigible, and one-eighth are amenable to reformatory efforts. Of the latter he says, "they consist largely of young men supposed to be in prison through indiscreet action, accident, the result of sprees, or the lack of understanding the ways we call right and wrong. They are not supposed to have become convicts through criminal minds, or through tendencies they prefer to retain." It is with these that he chiefly deals. He points out, in opposition to the usually accepted belief, that only about 25 per cent. of the criminals in Massachusetts, as well as in the whole United States, labour under the factory system in prison. The author objects to the factory system, and his letter is in support of hand labour in prisons. He looks upon the one-eighth referred to as undeveloped men, and as such are far more likely to benefit by the instruction imparted under hand labour than is possible under the factory system, besides the advantage of isolation and other influences. He has not found that where men have been taught on the factory system in prisons they have easily dropped into similar work when their time expired, but, on the contrary, that where they have been instructed under the hand labour system they have easily found work and have seldom returned to prison. He insists that labour in prisons would not be of a debasing character, and does not consider that the question of labour in prisons should be one of profit.

Problems of the Census. Opening Address before the American Social Science Association at Saratoga, 5th September, 1887. By Carroll D. Wright. 23 pp., 8vo. Boston, 1887.

In this paper Mr. Wright discusses some of the chief points to be considered at the taking of the eleventh (United States) census in 1890. He points out that owing to the illiteracy of imported citizens the age tables are in many cases unreliable, the replies concentrating on quinquennial periods, but this irregularity is he avers disappearing before the spread of education. With regard to illiteracy, he points out that the statistics of the last and previous censuses would necessarily give the number at its lowest, and in so far only could they be accepted as correct. As to the returns on insanity, Mr. Wright meets with the same difficulties in obtaining correct statistics as our own statists meet with in collecting the statistics of idiots who live at home. He says people object to reply to inquiries regarding their blind, lame, and generally chronically affected relatives; but on the other hand the same people insist upon intelligent legislation regarding them. Hence he argues "popular antagonism to such inquiries must therefore be ignored by the legislature, in order to meet the advanced demands of the very people who create the antagonism. The tenth census sought information on these points to a fuller extent than ever before, yet the facts secured were so incomplete that little or no use was made of them. This should not prevent their repetition to a reasonable degree." Where however Mr. Wright hopes for improvement in the next census is in the statistics relating to the capital invested in every industry, and the product of such capital, together with the wages paid during the year, the stock of raw material used, the quantity of goods produced, the relation between total output and possible maximum output, &c., &c. He is of opinion that in some respects the statisticians have not set about obtaining these returns in the right way; he has some doubts whether manufacturers would give these returns accurately, and says, "This is a question of educational influence to be exercised by careful statisticians by securing the confidence of the producers of the country in the statement that no harm shall come from giving free, full, and accurate answers to all inquiries instituted by the Government."

American Economic Association. The Study of Statistics in Colleges. By Carroll D. Wright. 21 pp., 8vo. Boston, 1887.

This is a plea in favour of the teaching of statistics in colleges as part of the curriculum. The author refers to the immense and incomparable field there is for statistics in America, and to the results hitherto attained by American statisticians, but which results he points out would be made further profitable if the men who prepared them were scientifically trained in their work. He gives a long list of the continental institutions which teach statistics, and compares it with the two or three American colleges which do the same. Want of proper training leads to false manipulation of figures, and the drawing of unwarrantable conclusions, and the author points out that although a census is taken every ten years in the United States, "as a rule the men who are brought into the work know nothing about statistics." The objection he has encountered, that the established colleges and schools have their time completely occupied in teaching the subjects forming the curricula of the schools, he meets by proposing a broadening of their chair of political economy sufficient "to take in statistical science, without impairing efficiency in this or any other department." One of his final sentences is worth quoting: "The colleges in this connection have an important duty to perform, for they can aid in ridding the public of the statistical mechanic, the man who builds tables to order to prove a desired result. These men have lowered the standard of statistical science by the empirical use of its forces."

XIV.—*Additions to the Library.*

Additions to the Library during the Quarter ended 31*st March*, 1888, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India, Colonial and other Possessions;* (c) *United Kingdom and its several Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*)*;* (f) *Periodicals, &c.* (*British*).

Donations.	By whom Presented.
(a) Foreign Countries.	
Argentine Republic—	
Los Presupuestos, los Recursos y las Leyes de Impuestos de la Nacion, la Municipalidad de la Capital y las 14 Provincias. Año 1886. 8vo.	The Statistical Bureau
Buenos Ayres—	
Boletin mensual de Estadistica Municipal. Año I, Oct.—Dec., 1887	Statistical Bureau of Buenos Ayres
Bulletin mensuel de Démographie de la Ville de—. VI^{e} année, Oct.—Dec., 1887	Dr. E. R. Coni
Austria and Hungary—	
Oesterreichisches Statistisches Handbuch. Vierter Jahrgang, 1885	J. S. Keltie, Esq.
Nachrichten über Industrie, Handel und Verkehr. Band XXXV—	The Ministry of Commerce
Hefte 1 und 2. Statistik des österreichischen Post- und Telegraphenwesens, 1886	
Heft 3. Hauptergebnisse der österreichischen Eisenbahn-Statistik, 1886	
Heft 4. Werthe für die Mengeneinheiten der 1886 ein- und ausgeführten Waaren	

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Austria and Hungary—*Contd.*	
Oesterreichische Statistik—	
Ergebnisse der Volkszählung und der mit derselben verbundenen Zählung der häuslichen Nutzthiere vom 31 December, 1880. Band i (in 3 heften). Band ii (in 2 heften) .... Band xvi. Heft 3. Der österreichische Staatshaushalt, 1883-84. Heft 4. Statistik der Sparcassen, 1885 .... Band xvii. Statistik des auswärtigen Handels der österreichisch-ungarischen Monarchie, 1886. Heft 1. Bericht über die Erhebung der Handels-Werthe und Haupt-Ergebnisse des auswärtigen Handels. Heft 2. Waaren-Einfuhr .... Statistische Monatschrift für 1886, 1887, und Jänuar und Februar, 1888	The Central Statistical Commission
Statistische Nachrichten über die Eisenbahnen der österreichisch-ungarischen Monarchie für das Betriebsjahr 1885. Fol.	The Ministry of Commerce
Hungary—	
Statistisches Jahrbuch für Ungarn, 1885. Heft 5. Handelsverkehr, 1885. Heft 7. Das Communicationswesen, 1885. Heft 11. Kriegsmacht, 1885 .... Magyarország Aruforgalma Ausztriaval es mas Orszagokkal. Fuzet 8—10, 1887. (Monthly Trade Returns) .... Ungarns Waarenverkehr mit Oesterreich und anderen Ländern, für das Halbjahr 1887 vom Monate Jänner bis ende Juni	The Royal Hungarian Statistical Bureau
AGRAM. Report of the Chamber of Commerce of—, on the Agriculture, Industry, and Commerce of Croatia during 1881-85. (In Hungarian.) 8vo.	The Chamber of Commerce
PRAGUE. Bulletin hebdomadaire de la Ville de—, et des Communes-faubourgs. (Current numbers)....	The Statistical Bureau of Prague
Belgium—	
Annales des Travaux Publics de Belgique. Tome xlv. 3ᵉ Cahier, 1887. (Contains "Statistique des Mines, minières, carrières, usines métallurgiques et appareils à vapeur pour 1886")	The Administration of Mines
Chemins de Fer, Postes et Télégraphes, Marine. Compte Rendu des Operations pendant 1885. Fol. Tableau général du Commerce avec les pays étrangers pendant 1885. La. fol.	J. S. Keltie, Esq.
BRUXELLES. Bulletin hebdomadaire de Statistique Démographique et Médicale de la Ville de—. (Current numbers)	Dr. E. Janssens
BRUGES. Rapport sur l'administration et la situation des affaires de la ville pour 1886	The Burgomaster
Bulgaria—	
Statistical Information published by the Statistical Bureau for 1886. Nos. 4—7, 8vo. (In Russian).... Statistique du Commerce de la Principauté de Bulgarie avec les pays étrangers pendant 1882. La. 8vo.	The Statistical Bureau

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Chili. Sinopsis Estadistica y Geografica de Chile en 1886. Nueva Edicion. 8vo.	—
China—	
Imperial Maritime Customs. I. Statistical Series, No. 2. Customs Gazette, July—September, 1887	Sir Robert Hart, K.C.M.G.
Corea—	
Annual Returns of the Trade in Foreign Vessels. No. 1, year 1885 Return of Import and Export Trade of Corea for the half-year ended December, 1880	J. S. Keltie, Esq.
Colombia. Descripcion Historica, Geografica y Politica de la Republica de Colombia. 8vo., 1887.	”
Costa Rica—	
Anuario Estadistico de la Republica de Costa-Rica, 1886 y 1887. Fol. Estadistica del Comercio Exterior, 1886. Fol. Memoria de la Secretaria de Hacienda y Comercio, 1887. 8vo.	”
Denmark—	
Forslag til Finantslov for 1886-87. 8vo.	J. S. Keltie, Esq.
Statistique du Danemark. 4e *Série*, 1887—	
D. No. 10a. La Marine Marchande et la Navigation du Royaume, 1886 E. No. 1. Comptes communaux, 1880-84. No. 2. Comptabilité de l'État pendant les 20 exercices, 1867-68—1886-87	The Statistical Bureau of Denmark.
Nationalökonomisk Tidsskrift. Ny Række. Hefte 6, 1887; Hefte 1, 2, 1888	The Danish Political Economy Society
Egypt—	
L'Administration Financière, 1884-87, et la modification du Régime Fiscal des Tabacs en Égypte. 8vo. 1887	Sir Edgar Vincent, K.C.M.G.
Administration des Chemins de Fer, Télégraphes, et Port d'Alexandrie. Rapport du Conseil d'Administration sur l'Exercice 1886, Xe année. 4to. Administration des Domaines de l'État Egyptien. Rapport . . . sur l'Exercice 1886. 4to. *Administration des Postes Egyptiennes*— Rapport sur l'Exercice 1886. 8vo. Statistique générale pour l'Exercice, 1886. 4to. Budgets Provisoires du Gouvernement Egyptien pour les Exercices 1885-88. (1888 an abridgment only) Compte général de l'Administration des Finances rendu pour l'Exercice 1886. Fol. Compte rendu des Travaux de la Commission de la Dette Publique pendant 1886. XIe année. 8vo. Daira Sanieh. Rapport présenté par le Conseil de Direction sur la situation de 1886. 4to. *Statistique Agricole*— Superficie de la culture Cotonnière dans la Basse Égypte, 1886.	Joseph Rabino, Esq., Alexandria

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Egypt—*Contd.*	
Statistique Agricole—Contd.	
Culture du Coton en 1887. (Also 2 copies in English.) 4to. .... Weekly Meteorological and Sanitary Statistics for 1886 and 1887 with an Essay on Sanitary Statistics by F. Engel. Fol. .... Alexandria General Produce Association. Statistics of Cotton Season 1885-86. Sheet .... J. Planta and Co. Exportation de Coton d'Alexandrie 1886-87. Sheet.	Joseph Rabino, Esq., Alexandria
France—	
Ministère de l'Agriculture. Bulletin. VIe année. No. 8. Dec., 1887. Diagram	The Ministry of Agriculture
Ministère des Finances. Bulletin de Statistique et de Législation comparée—	
(Selection from Contents).	
Janvier. France—Les Postes et Télégraphes, 1860-86. La Mésure du bien-être en Allemagne. Russie—Recettes et Dépenses en 1886 .... Fevrier. France—L'Enquête Agricole de 1882. Autriche-Hongrie—Le Commerce Extérieur de 1878-86	The Ministry of Finance
Reims. Bulletin Mensuel du Bureau Municipal d'Hygiène. Nov.—Jan., 1887-88	The Bureau of Hygiène
L'Economiste Français. (Current weekly numbers)	The Editor
Revue Bibliographique Universelle :—	
Partie Littéraire. Dec.—Fevrier, 1887-88 .... " Technique. Dec.—Fevrier, 1887-88	"
Revue Géographique Internationale. Juillet—Nov., 1887	"
Revue d'Economie Politique. Nos. 1, 4, et 5, 1887. No. 1, 1888. (Contents): Le Programme Economique de M. Schaeffle, par *E. Durkheim*. La Science Economique et la Politique Nationale, par *C. Turgeon*. Le Mouvement Coopératif aux États-Unis, par *U. Rabbeno*. Coup d'œil sur l'histoire de l'Economie Politique, par *E. F. de Flaix*	"
Annales de l'École Libre des Sciences Politiques. No. 1, 1888. (Contents): Les Attributions de l'État, par *E. Beaussire*. La Politique Coloniale de l'Allemagne, par *L. Delavaud*. De l'Organisation des partis politiques aux États-Unis, par *M. Ostrogorski*. Le Protectorat en Tunisie, par *E. Meyer*. La Mission du Marquis d'Éguilles en Écosse auprès de Charles-Edouard, 1745-46, par *G. L. Pontalis*. Le compte du Patrimoine dans la Comptabilité Publique Italienne, par *M. Campagnole*	The Institution
Journal de la Société de Statistique de Paris. 1888— Fevrier. Ce qu'est la France d'après l'Annuaire Statistique, par *T. Loua*. .... Mars. Ce qu'est la France d'après l'Annuaire Statistique, par *T. Loua*	The Society

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
France—*Contd.*	
Syndicat de l'Union des Marchands de Soie de Lyon. Statistique de la Production de la Soie en France et à l'Étranger. Récolte de 1884. 27 pp., 8vo. 1885	J. S. Keltie, Esq.
Germany—	
Deutsches Handels-Archiv. Dezember, 1886, Januar—November, 1887. 4to.	”
Monatshefte zur Statistik des Deutschen Reichs. November—Januar, 1887-88	The Imperial Statistical Bureau
BADEN. Verhandlungen der Stände-Versammlung des Groszherzogthums Baden im Jahre 1885 SAXONY. Staatshaushalts-Etat für das Königreich Sachsen auf die Finanzperiode 1886-87. Fol. WURTEMBERG. Hauptfinanzetat des Königreichs Württemberg für 1885-87. Fol.	J. S. Keltie, Esq.
BERLIN. Veröffentlichungen des Statistischen Amts der Stadt Berlin. Eheschliessungen, Geburten, Sterbefälle, und Witterung. (Current numbers)	The Statistical Bureau of Berlin
FRANKFORT. Beiträge zur Statistik der Stadt Frankfurt-am-Main. Band v, Heft 2. (Ergebnisse der Volkszählung vom 1 December, 1885, zu Frankfurt)	The Statistical Bureau of Frankfort
MAGDEBURG. *Magdeburgische Statistik*, 1886-87— Heft 1. Schülerstatistik, Die Altersverhältnisse der Schüler in den Magdeburger Unterrichtsanstalten Heft 2. Die Bewegung der Bevœlkerung der Stadt Magdeburg im Laufe des Jahres 1886. Diagrams. 8vo.	The Statistical Bureau of Magdeburg
Hamburg—	
Entwurf zum Hamburgischen Staats-Budget für 1886	J. S. Keltie, Esq.
Statistik des Hamburgischen Staates. Heft xiv, Abtheilung 2. 4to. 1887	The Statistical Bureau of Hamburg
Greece. The Finances of Greece. Speech of the Minister of Finance on introducing the Budget for 1887. 8vo. 1886	J. S. Keltie, Esq.
Hawaiian Islands—	
Annual Report of the Collector General of Customs relative to Imports, Exports, Immigration, and Navigation, for 1885 and 1886 Report of the President of the Board of Health to the Legislative Assembly of 1886	”
HONOLULU. Almanac and Directory, 1886, containing Statistical and General Information. Plates, 8vo.	”
Italy—	
Annali di Agricoltura, 1887—	
No. 139. Le R. Scuole Pratiche e Speciali di Agricoltura nel biennio 1883-4 e 1884-5 „ 143. Sull' Industria dell' Amido. Plates	The Director-General of Agriculture

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Italy—*Contd.*	
Annali dell' Industria e del Commercio, 1887. Atti del Consiglio dell' Industria e del Commercio	The Director-General of the Statistics of Italy
Bollettino Consolare, Dicembre, 1887. (Relating to *Brazil*—Pernambuco; Straits Settlements, Switzerlaud, *Morocco*—Larache; Cape Colony, *Turkey*—Erzeroum; Luxemburg)	
Bollettino di Legislazione e Statistica Doganale e Commerciale. Anno iv, Nov., Dec., 1887. Anno v, Gennaio, 1888	
Bollettino mensile delle situazioni dei Conti degli Istituti d'Emissione. Anno xviii, Nos. 11, 12, 1887	
Bollettino di Notizie sul Credito e la Previdenza. Anno v, Nos. 22—24, 1887. Anno vi, Nos. 1—3, 1888	
Bollettino Settimanale dei Prezzi di alcuni dei principali Prodotti Agraria e del Pane. (Current numbers)	
Bollettino del Ministero degli Affari Esteri. Parte Prima. Vol. i, Gennaio, 1888	
Bollettino Semestrale del Credito Co-operativo, ordinario, Agrario e Fondiario. Anno iv. 2e Semestre, 1886	
Commissione Reale d'Inchiesta sulle Opere Pie al 31 Dicembre, 1880, e dei Lasciti di Beneficenza fatti nel quinquennio 1881-85. Vol. iii, Veneto. Fol.	
Relazione della Leva sui giovani nati nell' anno 1866 e delle vicende del R. Esercito, 1886-87. Fol.	
Relazione sulle Condizioni Sanitarie dei Corpi della R. Marina durante il quadriennio 1883-86	
Relazione Medico-Statistica sulle Condizioni Sanitarie dell' Esercito Italiano nell' anno 1886	
Statistica del Commercio Speciale di Importazione e di Esportazione. Novembre—Decembre, 1887	
Statistica Giudiziaria Civile e Commerciale per l'anno 1885. 8vo.	
L'Economista. (Current weekly numbers.) Florence....	The Editor
La Gerarchia Cattolica la Cappella e la Famiglia Pontificie per l'anno 1885. Portrait, 12mo	J. S. Keltie, Esq.
Giornale degli Economisti. Vol. iii, Fasc. 1, 1888. (Contents)—La Banca Unica: *L. Rameri.* La monographia d'officina: *I. S. Spoto.* Emissione e circolazione: *L. Sbrojavacca.* L'Esposizione di Bologna: *P. Mariotti.* Di alcune riforme nell' amministrazione finanziaria. Rivista Parlamentare: *L. Cattaneo*	The Editor
Japan. Imperial University. The Calendar for the year 1887-88. (xxth—xxist year of Meiji.) 8vo........	The University
Mexico. La Crisis Monetaria. Estudios sobre la Crisis Mercantil y la Depreciacion de la Plata. Diagram, 8vo. 1886	J. S. Keltie, Esq.

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Netherlands—	
Staten van de Bevolking der Steden en Gemeenten van het Koningrijk der Nederlanden, op den 1 Januarij, 1840, naar aanleiding der jongste algemeene Volkstelling. La. 8vo. 1841	M. Gideon, M. Boissevain
Statistiek der Geboorten en der Sterfte, naar den Leeftijd ende oorzaken van den dood in Nederland. Juli—September, 1887	The Department of the Interior
Regeeringsalmanak voor Nederlandsch-Indië, 1886. 8vo.	J. S. Keltie, Esq.
Vereeniging voor de Statistiek in Nederland—	
Algemeene Statistiek van Nederland. 1 & 2 Deel (in 1 vol.). Maps, la. 8vo. 1870-73	M. G. M. Boissevain
Staatkundig en Staathuishoudkundig Jaarboekje voor 1849. Eerste Jaargang. 12mo.	
Portugal—	
Annuario Estatistico de Portugal, 1884. 8vo.	J. S. Keltie, Esq.
Orçamento Geral e proposta de lei das Receitas e das Despezas Ordinarias de Estado na Metropole para o Exercicio de 1886-87. Fol.	
Roumania. Tablou General indicand Comerciul Romaniei en Terile Straine in anul 1883	„
Russia—	
Journal of the Ministry of Finance. (Current weekly numbers.) (In Russian). 1887	M. A. Vessélovsky
Règlement définitif du Budget de l'Empire pour l'Exercice, 1886. 8vo.	
TCHERNIGOV. Data for the Valuation of Landed Dependencies collected by the Tchernigov Statistical Department of the Government Provincial Board. Vol. xv, maps, 4to. 1887. (In Russian)	The Department
Russische Revue. Vierteljahrsschrift für die Kunde Russlands. xv Jahrgang, Heft 4. 1886	J. S. Keltie, Esq.
Spain—	
Anuario oficial de Correos y Telégrafos de España. 1886 y 1887. Map, 8vo.	„
Estadistica General del Comercio Exterior de España en 1884. Fol.	
Estadistica Minera de España, 1884. 8vo.	
Estado General de la Armada para el año de 1886.	
Guia oficial de España. 1887. 8vo., portrait	
Lista oficial de los Buques de Guerra y Mercantes de la Marina Española. No. 147, 8vo. 1886	
Memoria sobre las Obras Publicas de 1884 en lo relativo á Ferro-carriles. Map, 4to.	
Presupuestos Generales del Estado para el año economico 1887-88. Fol.	
Memorias Comerciales y Suplemento, 1887-88—	
Sheet 27. Nueva Orleans y Philippeville	The Board of Customs
„ 1. Buenaventura, Tunez, San José de Costa Rica, San José de Guatemala, y Shanghay	

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Spain—*Contd.*	
Memorias Comerciales y Suplemento, 1887-88—*Contd.*	
Sheet 2. Shanghay	The Board of Customs
„ 3. Shanghay y Boston	
„ 4. Boston, Palermo, Varsovia, y Amberes.	
Sweden and Norway—	
NORWAY—	
Beretning om Kongeriget Norges ökonomiske Tilstand i aarene 1846-55, med tilhorend Tabeller. 2 vols., la. 8vo.	J. S. Keltie, Esq.
Statistiske Tabeller for Kongeriget Norge. 2 vols., obl. fol. 1856-57	
SWEDEN—	
Bidrag till Sveriges Officiela Statistik—	
C. Bergshandteringen under Bruksåret 1857	The Central Statistical Bureau
D. Fabriker och Manufakturer, 1868 and 1870	
E. Inrikes Sjöfart och Handel, 1868 and 1870	
F. Utrikes Handel och Sjöfart, 1863, 1867, 1868, and 1870	
G. Fångvården, 1863, 1867, and 1868	
K. Helso-och Sjukvården, 1866	
L. Statens Jernvägstrafik, 1862-64, 1867 and 1868	
M. Postverket, 1865-69	
N. Jordbruk och Boskapsskötsel, 1866	
O. Landtmäteriet, 1868	
P. Folkundervisningen, 1868	
Riksdagens Revisorers Barättelse om den år 1886. 4to.	J. S. Keltie, Esq.
Switzerland—	
Allgemeine Resultate betreffend die Trauungen, Geburten und Sterbefälle in der Schweiz im Jahre 1884. 4to	„
Statistique du Commerce de la Suisse avec l'Étranger en 1885 et 1886. Map, la. fol.	
Tableau comparatif des Valeurs Moyennes à l'Exportation pour les différents pays. La. fol. 1887	
Voranschlag der Schweizerischen Eidgenossenschaft für 1887. 4to	
Société Suisse de Statistique. Journal de Statistique Suisse. I^e—VI^e années, 1865-70, et VIII^e année, 1872. 5 vols., maps and diagrams, 4to.	Professor Koenig, Berne
Journal de Statistique Suisse, 1887. 4 Quartal-Heft	The Federal Statistical Bureau
United States—	
Department of Agriculture. Monthly Reports on the Condition of Crops, &c. Nos. 47 and 48, 1887-88	The Department of Agriculture
Bimetallism in Europe (Reports from the Consuls of the United States. No. 87, December, 1887). Diagrams. 8vo.	The Department of State
Report of the Commissioner of Education for the year 1885-86. 8vo.	The Bureau of Education

Donations—Contd.

Donations.	By whom Presented.
(a) Foreign Countries—*Contd.*	
United States—*Contd.*	
Bureau of Education. Circular of Information, No. 2, 1887. The Study of History in American Colleges and Universities. Plates, 8vo.	The Bureau of Education
Marine Hospital Service. Annual Report of the Supervising Surgeon-General for the fiscal year 1887. 8vo.	The Surgeon-General
Mint. Annual Report of the Director for the fiscal year ended 30th June, 1887. 8vo.	The Director of the Mint
Report of the Surgeon-General of the Army for the year ended 30th June, 1887	The Surgeon-General
Summary Statement of Imports and Exports. Nos. 4—6, 1887-88	The Bureau of Statistics
MASSACHUSETTS. Eighteenth Annual Report of the Bureau of Statistics of Labor. December 1887. (On the Unemployed, from the State Census of 1885)	The Bureau
RHODE ISLAND. Monthly Reports of Deaths in the City of Providence. Nos. 389—391, 1887-88	Dr. E. M. Snow
Bankers' Magazine, December, 1887, January and February, 1888. New York	The Editor
Bradstreet's Journal. (Current weekly numbers.) 1888	"
Commercial and Financial Chronicle. (Current weekly numbers.) 1888	"
Science. (Current numbers.) 1888	"
American Geographical Society. Bulletin. Vol. xix. No. 4, 1887	The Society
American Academy of Arts and Sciences. Memoirs. Centennial volume. Vol. xi, Part 5, No. 6. 1887	The Academy
American Philosophical Society. Proceedings of the—Vol. xxiv, No. 126. Plates. 8vo.	The Society
Astor Library. Thirty-ninth Annual Report of the Trustees for 1887. 8vo.	The Trustees
Franklin Institute, Journal. Jan.—March, 1888	The Institute
Political Science Quarterly. Vol. ii, No. 4, 1887. The Oleomargarine Law, by *H. C. Bernard*. The Constitution in Reconstruction, by *W. A. Dunning*. Profits under Modern Conditions, by *J. B. Clark*. The Natural Rate of Wages, by *F. H. Giddings*. Local Government in England, by *Prof. F. J. Goodnow*. India's Unadjusted Trade Balance, by *W. Martin Wood*	The Editor
Quarterly Journal of Economics. Vol. ii, No. 2, January, 1888. The Eleventh Census of the United States, by *F. A. Walker*. The Workings of the Interstate Commerce Law, by *A. T. Hadley*. The Rate of Interest and the Laws of Distribution, by *S. Webb*. *Notes and Memoranda.*—Political Economy, Old and New. Wages and Profits, Occupations of Immigrants. Suggested rearrangement of Economic Study. *Correspondence.* Economic Thought in Russia. *Appendix.* The Mystery of the new-fashioned Gold-smiths, &c. [Reprint of a scarce Tract *circa* 1676.]	"

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Uruguay. Comercio Exterior de la Republica Oriental del Uruguay, 1885-86. 2 parts, 8vo.	J. S. Keltie, Esq.
Venezuela. Gaceta Oficial. (Current numbers.) 1888.	The Statistical Bureau
International. Statistique Internationale. Navigation Maritime III. A. Jaugeage des Navires. Renseignements complémentaires. B. Les Marines marchandes, 1880-86. Fol.	The Central Statistical Bureau of Norway
(b) **India, Colonial, and other Possessions.**	
India, British—	
Statement of the Trade of British India with British Possessions and Foreign Countries for the five years 1882-83 to 1886-87. [C-5266.] 1888	The Record Branch, India Office
Trade and Navigation. Monthly Accounts. Nos. 8 and 9, 1887-88	The Department of Finance and Commerce, Calcutta
Trade by Land with Foreign Countries. Accounts. Nos. 5—7, 1887-88	
Canada, Dominion of—	
Journals of the House of Commons. Vol. xxi. Session 1887	J. G. Bourinot, Esq., LL.D.
Journals of the Senate. Vol. xxi. Session 1887	
Public Accounts for the year 1886-87	
Report of the Auditor-General on Appropriation Accounts for the year 1886-87. 8vo.	
Report of the Minister of Justice as to Penitentiaries for the year 1886-87	
Report of the Minister of Public Works for the year 1886-87	
Tables of the Trade and Navigation for the year 1886-87	
Sessional Papers. Session 1887. Vol. xvii. Trade relations between Canada and West Indies. Number of Chinese who arrived at the different ports in 1886. Commercial relations with France	
Insurance and Finance Chronicle. No. 12, 1887, Nos. 1 and 2, 1888. Portraits	The Editor
Cape of Good Hope—	
Acts of Parliament of the Colony. Session 1887. Fol.	The Colonial Secretary
Civil Service List and Calendar for 1888. Map, 8vo.	
Sources of Revenue of the Colony, with Tariffs at present in force. . . . 8vo. 1887	
Votes and Proceedings in Parliament. Session 1887—	
Appendix I to Votes and Proceedings. Vol. i, General and Financial. Vol. ii, Civil Service, Coal Boring in the Karroo, Colonial Forces, Convicts, Deeds, Education, Harbours. Lands, Medical, Meteorological Commission, Mines, Museums and Public Libraries, Native Affairs, Parks and Botanic Gardens, Police, Postal and Telegraphs, Public	

Donations—Contd.

Donations.	By whom Presented.
(b) **India, Colonial, and other Possessions**—*Contd.*	
Cape of Good Hope—*Contd.*	
Votes and Proceedings in Parliament, 1887—*Contd.*	
Appendix I to Votes and Proceedings, vol. ii—*Contd.*	
Works, Railways, Tobacco Cultivation, Viticulture, Woods and Forests. Fol.	The Colonial Secretary
Appendix II to Votes and Proceedings. Reports of Select Committees. Session 1887. 8vo.	
New South Wales. The Wealth and Progress of New South Wales, 1886-87, by T. A. Coghlan, Government Statistician. Map, 8vo. 1887	The Author
New Zealand—	
Reports on the Mining Industry of New Zealand. Plates, fol. 1887	The Minister of Mines
Statistics of the Colony of New Zealand for 1886, with Abstracts from the Agricultural Statistics of 1887. Fol.	The Registrar-General of New Zealand
Queensland—	
Supplement to the Government Gazette (containing Vital Statistics). Nos. 66 and 94. 1888	The Registrar-General of Queensland
Vital Statistics, 1886. Twenty-seventh Annual Report by the Registrar-General. Fol.	
Tasmania. Statistics of the Colony for 1886. Fol.	The Government Statistician
Trinidad. Vital Statistics, Registrar-General's Report for 1887. Diagram, fol.	The Registrar-General of Trinidad
Victoria—	
Australasian Statistics for 1886	H. H. Hayter, Esq., C.M.G., Government Statist
Estimated Population of Victoria on 30th September, 1887. Slip	
Statistical Register of the Colony of Victoria, 1885	
Gold Fields of Victoria. Reports of the Mining Registrars for the quarter ended 30th September, 1887. Plans	The Department of Mines
Report of the Trustees of the Public Library, Museums, and National Gallery of Victoria for 1886. La. 8vo.	The Trustees

---

(c) **United Kingdom and its several Divisions.**	
United Kingdom—	
Agricultural Produce Statistics of Great Britain (estimated) for 1887. Map, 8vo. [C–5188.]	The Agricultural Department
Annual Report of the Agricultural Department on the Contagious Diseases, Inspection and Transit of Animals for 1886. 8vo. [C–5054.] 1887	J. S. Keltie, Esq.
Annual Returns of the British Army for 1885 and 1886. 8vo.	

Donations—Contd.

Donations.	By whom Presented.
(c) **United Kingdom and its Divisions**—*Contd.*	
United Kingdom—*Contd.*	
Board of Trade Journal, 1888— (Selection from Contents.)	
January. The Labour Market. French Colonial Policy	The Board of Trade
February. Competition with English Foreign Trade. Russian Sugar Industry in 1887. Railway Development in Lourenço Marques	
Labour Statistics. Returns of Wages published between 1830 and 1886. [C-5172.] 1887	
Navy. Statistical Report of the Health of the Navy for 1886. No. 291, 1887	The Director-General, Medical Department
Postmaster General. Thirty-third Report of the—, on the Post Office. 8vo. [C-5211.] 1887	J. S. Keltie, Esq.
Trade and Navigation. Monthly returns. December, 1887, January and February, 1888	The Board of Trade
England—	
Births and Deaths in London, and in twenty-seven other great Towns. (Weekly Returns, with an Annual Summary.) (Current numbers)	The Registrar-General of England
British Museum. Catalogue of Printed Books. 4 parts. 4to. 1887-88	The Trustees
LONDON. Report of the Chief Officer of the Metropolitan Fire Brigade on the state of the Brigade and the Fires in London during 1887. 8vo.	Captain E. M. Shaw, C.B.
Ireland—	
Births and Deaths in Dublin, and in fifteen of the principal Urban Sanitary Districts. (Weekly Returns, with a Quarterly and Annual Summary.) (Current numbers)	The Registrar-General of Ireland
Quarterly Return of Marriages to September, Births and Deaths to December, 1887. No. 96. 8vo.	
Reports of the Commissioners of National Education in Ireland. 51st and 52nd, with Appendices, and the 53rd Report, 1884-86. 8vo.	W. R. J. Molloy, Esq., Dublin
Scotland—	
Births, Deaths, and Marriages in the eight principal Towns. (Weekly and Monthly Returns.) (Current numbers)	The Registrar-General of Scotland
Quarterly Return of Births, Deaths, and Marriages. Quarter ending 31st December, 1887. No. 132	
EDINBURGH. City of—. Accounts published in the year 1887. Fol.	The City Chamberlain
(d) **Authors, &c.**	
BATEMAN (A. E.). Our Statistics of Foreign Trade, and what they tell us. 31 pp., 8vo. 1887	The Author
Denis (H.)—	
L'Alimentation et la force de Travail. Étude de Sociologie Biologique comparée. xii + 34 pp., 8vo. Bruxelles, 1887	„

Donations—Contd.

Donations.	By whom Presented.
(d) **Authors, &c.**—*Contd.*	
Denis (*H.*)—*Contd.*	
La Crise Agricole. L'Histoire des Prix en Belgique. (16 diagrams.) Obl. 4to. Bruxelles, 1885	The Author
Elliott (T. H.). Notes on Taxation and Rating. 85 pp., 8vo. Manchester, 1888	"
Farrer (Sir T. H.). Observations on the connection between Gold, Credit, and Prices . . . vi + 56 pp., fol. 1887	"
Grimshaw (Dr. T. W.). On the Methods of Drawing up Census Returns. 13 pp., 8vo. Wien, 1887	"
Haggard (F. T.). Our Commercial See-Saw, or the Upward and Downward Movements in Home Trade. 8 pp., 8vo. 1888	"
Hauser (Dr. Emanuel). Die Entwickelung der Viehzucht in Preussen von 1816 bis 1883, mit besonderer Rücksicht auf die beiden Einheitlichen Zählungen 1873 und 1883 für das Ganze Deutsche Reich. 294 pp., 8vo. Jena, 1887	Gustav Fischer, Esq.
Hübner's (Otto) Statistische Tafel aller Länder der Erde. 35 Auflage für 1886. Sheets	J. S. Keltie, Esq.
Hudson (Thomas). Temperance Pioneers of the West. Personal and Incidental Experiences. With Portrait. 308 pp., 8vo. 1887	The Author
Konta (Ignaz). Eisenbahn-Jahrbuch der Oesterreichisch-Ungarischen Monarchie. XVIII^{er} Jahrgang. Dritte Abtheilung. 8vo. Wien, 1885 Kummer (J. J.). Gutachten betreffend die Hagelversicherungsfrage. 54 pp., 8vo. [Bern], 1887	J. S. Keltie, Esq.
Levasseur (Emile). Statistique de la Superficie et de la Population des Contrées de la Terre. 192 pp., maps, la. 8vo. Rome, 1887	The Author
Nicholson (J. Shield). A Treatise on Money and Essays on Present Monetary Problems. xiv + 375 pp., 8vo. 1888	Messrs. Blackwood, Edinburgh
Nubar (M. Boghos, Pacha). Note sur les Irrigations en Égypte. 80 pp., plates, 8vo. Paris, 1887	J. Rabino, Esq.
Page and Gwyther (*Messrs.*)—	
Chart of Money and Discount Rates in London during 1887 Chart of Prices and Rates in London during 1887. (Bar Silver and Mexican Dollars. India Council Bills, &c. Rupee Paper 4½ and 4 per cent.) Sheets	Messrs. Page and Gwyther
Pierrard (Paul). Tableaux Synoptiques du Commerce de Laines, Fils et Tissus, en Angleterre pendant l'année 1887. Sheet	The Author
[Publisher (A).] Copyright, National and International; with Remarks on the Position of Authors and Publishers. [Anon.] vii + 79 pp., 8vo. 1887	J. S. Keltie, Esq.
Raffalovich (Arthur). Le Logement de l'Ouvrier et du Pauvre. États-Unis, Grande-Bretagne, France, Allemagne, Belgique. 486 pp., 12mo. 1887	The Author
Rathgen (Dr. K.). Ergebnisse der Amtlichen Bevölkerungstatistik in Japan. 19 pp., map, 4to. 1887	"
Ross (Agustin). La Procedencia y la Inversion de las Rentas Nacionales de Chile en 1885. 147 pp., 8vo. Valparaiso. 1887	"

Donations—Contd.

Donations.	By whom Presented.
(d) **Authors, &c.**—*Contd.*	
Sandberg (C. P.). Swedish Railways: technically and commercially. 4 pp., map, fol. 1888	The Author
Walras (Léon). Note sur la Solution du Problème Monétaire Anglo-Indien. 4 pp., 8vo. 1887	"
Weeks (Joseph D.). Three Abstracts from "Mineral Resources of the United States, 1886," relating to Manganese, the Manufacture of Coke, and Natural Gas. 8vo. 1887	"
Weld, (C. R.). Statistical Companion to the Pocket Book, corrected to 1844. viii + 60 pp., 16mo. 1844	Dr. T. Graham Balfour, F.R.S.
Worsfold (William B.). Over-Government. A Lecture by—. 38 pp., 8vo. 1884	The Author
Zimmermann (Herm). Beiträge zur Theorie der Dienstunfahigkeits-und Sterbens-Statistik. Heft III. Im auftrage des Vereins Deutscher Eisenbahn-Verwaltungen ... Jahre 1886. 199 pp., 8vo., diagram. 1888	"
(e) **Societies, &c. (British).***	
Arts, Society of—. Journal. Current numbers. 1888....	The Society
British Association for the Advancement of Science. Report of the Fifty-seventh Meeting held at Manchester in 1887. Plates, 8vo. (Contents of Section F, Economic Science and Statistics.) Address of the President of the Section, *R. Giffen*. Limited Liability: *G. A. Jamieson*. The Economic Policy of the United States: *L. Levi*. Report of Committee on the Methods of Ascertaining and Measuring Variations in the Value of the Monetary Standard. Monetary Jurisprudence: *S. D. Horton*. Some Notes on Money: *Sir T. Farrer*. Changes in Real and in Money Prices: *W. Hooper*. Graphic Illustrations of the Fall of Prices in Belgium, France, and England: *Professor Denis*. Effective Consumption and Effective Prices in their Economical and Statistical Relations: *Hyde Clarke*. The Battle between Free Trade and Protection in Australia: *W. Westgarth*. Preventible Losses in Agriculture: *Professor W. Fream*. The Future of Agriculture: *W. Botly*. Recent Illustrations of the Theory of Rent and their Effect on the Value of Land: *G. A. Jamieson*. On Depreciation of Land as caused by recent Legislation: *G. C. Prance*. Land Tenure in Bosnia and the Herzegovina: *Miss Irby*. A Plea for County Councils: *J. T. Kay*. The Distribution of Wealth in Scotland: *R. Richardson*. The Application of Physics and Biology to Practical Economics: *P. Geddes*. Report of the Committee for continuing the inquiries relating to the Teaching of Science in Elementary Schools. Schools of Commerce: *Sir P. Magnus*. Manual Training a Main Feature in National Education: *W. Mather*. Technical Education: the form it should	The Association

---

* Foreign and Colonial Societies will be found under the various countries or possessions to which they belong.

Donations—Contd.

Donations.	By whom Presented.
(e) **Societies, &c. (British)**—*Contd.*	
British Association—*Contd.*	
take: *E. J. Watherston.* Manual Training: an Experiment at Keswick: *Rev. H. D. Rawnsley.* Home Education in its bearing on Technical Education: *Miss C. M. Mason.* The Classification of the Exports of Cotton Piece Goods in Board of Trade Returns: *F. Hardcastle, M.P.* The Statistics of our Foreign Trade, and what they tell us: *A. E. Bateman.* Report of the Committee on the Regulation of Wages by means of Lists in the Cotton Industry. Expenditure of Wages: *D. Chadwick.* History of the Cotton Trade: *W. Andrews.* Gold and Silver; their Geological Distribution and their probable Future Production: *W. Topley.* Attempt to bring the issue between "Mono-metallists" and "Bi-metallists" unto such terms that an intelligent public opinion may be formed thereon: *E. Atkinson.* On the Solution of the Anglo-Indian Monetary Problem: *Professor L. Walras.* Food as an Aid to Elementary Education: *G. H. Sargant.* Phthisis Centres in Manchester and Salford: *A. Ransome.* On some important Statistics relating to the Silk Industry: *T. Wardle.* On Bi-metallism: *J. Nicholson.* The Position of Economics in Holland: *Professor Greven.* Socialism: *Professor W. Graham.* On the Increase of Wealth and Population in Lancashire: *W. E. A. Axon*	The Association
Co-operative Wholesale Society, Limited. Annual and Diary for the years 1883, 1884, and 1886. 3 vols., plates and diagrams, 8vo.	The Society
Co-operative Wholesale Societies, Limited. England and Scotland. Annual for the years 1887 and 1888. 2 vols., plates and diagrams, 8vo.	
Hull Incorporated Chamber of Commerce and Shipping. Annual Report. 8vo. 1887	C. M. Kennedy, Esq., C.B.
Institute of Actuaries. Journal. Vol. xxvii, part 1, January, 1888. Plate, 8vo.	The Institute
Institute of Bankers. Journal, January—March, 1888	,,
Institute of Builders. Proceedings. Vol. i, parts 1 and 2, 8vo. 1887	,,
Institution of Mechanical Engineers. Proceedings. Nos. 3 and 4, 1887. Plates. 8vo.	The Institution
London Chamber of Commerce. Journal. Nos. 71—73, 1888	The Chamber of Commerce
London Hospital. General Statement of the Number of Patients under treatment during 1887. Sheet	S. Day, Esq.
Manchester Literary and Philosophical Society—	
Memoirs. Third Series. Vol. x. Plates and diagrams, 8vo. 1887	The Society
Proceedings. Vols. xxv and xxvi. Sessions 1885-86 and 1886-87. 8vo., plates and diagrams	
Peabody Donation Fund. Twenty-third Annual Report of the Trustees for 1887	The Secretary
Royal Geographical Society. Proceedings. January—March, 1888	The Society

PERIODICAL RETURNS.

REGISTRATION OF THE UNITED KINGDOM.

No. I.—ENGLAND AND WALES.

MARRIAGES—To 30th September, 1887.

BIRTHS and DEATHS—To 31st December, 1887.

A.—*Serial Table of* Marriages, Births, *and* Deaths, *returned in the Years* 1887-81, *and in the* Quarters *of those Years.*

Calendar Years, 1887-81 :—*Numbers.*

Years	'87.	'86.	'85.	'84.	'83.	'82.	'81.
Marriages No.	—	196,071	197,745	204,301	206,384	204,405	197,290
Births........ ,,	886,017	903,866	894,270	906,750	890,722	889,014	883,642
Deaths .... ,,	530,577	537,276	522,750	530,828	522,997	516,654	491,935

Quarters *of each Calendar Year,* 1887-81.

(I.) Marriages :—*Numbers.*

Qrs. ended last day of	'87.	'86.	'85.	'84.	'83.	'82.	'81.
March......... No.	38,804	39,202	39,111	41,614	44,096	39,820	38,043
June .... ,,	52,432	50,325	52,054	53,752	48,057	52,905	50,370
September ,,	49,718	48,565	49,476	50,336	52,239	51,207	48,607
December ,,	—	57,979	57,104	58,599	61,992	60,473	60,270

(II.) Births :—*Numbers.*

Qrs. ended last day of	'87.	'86.	'85.	'84.	'83.	'82.	'81.
March......... No.	219,515	230,330	231,955	224,689	232,156	223,616	225,451
June .... ,,	226,371	231,187	222,142	231,185	228,676	227,425	225,303
September ,,	222,382	224,338	218,558	225,985	214,233	220,382	215,966
December ,,	217,749	218,011	221,615	224,941	215,657	217,591	216,922

(III.) Deaths :—*Numbers.*

Qrs. ended last day of	'87.	'86.	'85.	'84.	'83.	'82.	'81.
March......... No.	143,346	156,653	147,721	132,150	146,832	140,121	138,312
June .... ,,	128,436	125,359	132,340	127,904	133,789	125,107	120,811
September ,,	125,003	125,366	114,308	134,882	113,117	118,235	110,204
December ,,	133,792	129,898	128,381	135,892	129,259	133,191	122,608

Annual Rates of MARRIAGES, BIRTHS, *and* DEATHS, *per* 1,000 PERSONS LIVING *in the Years* 1887-81, *and in the* QUARTERS *of those Years.*

Calendar YEARS, 1887-81 :—*General Ratios.*

YEARS............	'87.	Mean '77-86.	'86.	'85.	'84.	'83.	'82.	'81.
Estmtd. Popln. of England *in thousands* in middle of each Year....	28,247,	—	27,871,	27,499,	27,132,	26,771,	26,414,	26,062,
Persons Married	—	15·0	14·1	14·4	15·0	15·4	15·5	15·1
Births	31·4	34·0	32·4	32·5	33·3	33·3	33·7	33·9
Deaths................	18·8	19·9	19·3	19·0	19·5	19·5	19·6	18·9

QUARTERS *of each Calendar Year,* 1887-81.

(I.) PERSONS MARRIED :—*Ratio per* 1,000.

Qrs. ended last day of	'87.	Mean '77-86	'86.	'85.	'84.	'83.	'82.	'81.
March	11·1	12·3	11·4	11·5	12·3	13·4	12·2	11·8
June......................	14·9	15·2	14·5	15·2	15·9	14·4	16·1	15·5
September	14·0	14·7	13·8	14·3	14·7	15·5	15·4	14·8
December	—	17·6	16·5	16·5	17·1	18·4	18·2	18·3

(II.) BIRTHS :—*Ratio per* 1,000.

Qrs. ended last day of	'87.	Mean '77-86.	'86.	'85.	'84.	'83.	'82.	81.
March	31·5	35·0	33·5	34·2	33·2	35·2	34·3	35·1
June....................	32·1	34·8	33·3	32·4	34·2	34·3	34·5	34·7
September	31·2	33·2	31·9	31·5	33·0	31·7	33·1	32·9
December	30·6	33·0	31·0	32·0	32·9	32·0	32·7	33·0

(III.) DEATHS :—*Ratio per* 1,000.

Qrs. ended last day of	'87.	Mean '77-86.	'86.	'85.	'84.	'83.	'82.	'81.
March	20·6	22·2	22·8	21·8	19·5	22·2	21·5	21·5
[illegible]	18·2	19·6	18·0	19·3	18·9	20·0	19·0	18·6
[illegible]	17·6	18·0	17·8	16·5	19·7	16·8	17·8	16·8
[illegible]	18·8	19·8	18·5	18·5	19·9	19·2	20·0	18·7

B.—*Comparative Table of* CONSOLS, PROVISIONS, COAL *and* PAUPERISM *in each* QUARTER *of* 1885-86-87.

Quarters ending	Average Prices of								Pauperism.	
	Consols (for Money) per 100*l.* Stock.	Discount charged by the Bank of England.	Wheat per Quarter in England and Wales.		Meat per Pound at the Metropolitan Meat Market (by the Carcase), with the *Mean* Prices.		Coal (Seaborne) in the London Market per Ton.		Quarterly Average of the Number of Paupers Relieved on the *Last Day* of each Week.	
					Beef.	Mutton.			In-door.	Out-door.
1885	£	£	*s.*	*d.*	*d. d. d.*	*d. d. d.*	*s.*	*d.*		
Mar. 31	98⅞	4·24	32	9	4—7 5½	4¼—7½ 5⅞	15	9	189,718	546,688
June 30	98¼	2·75	34	10	4¼—6¾ 5½	4⅛—8⅛ 6½	15	9	173,498	524,628
Sept. 30	99⅞	2·00	32	10	3¾—6¾ 5¼	4¼—7¾ 6	14	10	167,185	513,326
Dec. 31	100	2·68	30	9	3⅝—6¾ 5⅛	3½—7 5¼	16	3	183,503	528,885
1886										
Mar. 31	100⅛	2·75	29	9	3½—6¼ 4⅞	3⅛—7¼ 5⅝	15	9	194,033	579,624
June 30	101	2·50	31	4	3⅛—6½ 5⅛	4¾—9⅛ 7	14	5	176,074	557,673
Sept. 30	101⅛	2·90	31	9	3⅜—6½ 5	4¼—8¼ 6¼	14	6	168,225	529,404
Dec. 31	101	4·06	31	4	3⅛—6⅛ 4⅝	3⅝—7⅛ 5¾	15	-	183,226	536,226
1887										
Mar. 31	101	4·20	34	0	2⅞—5½ 4¼	3½—7¼ 5⅜	15	2	193,957	573,627
June 30	102½	2·23	33	9	3—5½ 4¼	3½—7¼ 5⅜	15	2	178,652	543,476
Sept. 30	101½	2·95	32	1	3—5⅝ 4⅜	3⅜—7⅛ 5¼	13	11	171,551	526,849
Dec. 31	102⅜	4·00	30	2	2⅛—6⅛ 4⅛	3⅛—6⅞ 5	15	2	189,055	539,861

C.—*Special Average Death-Rate Table:*—ANNUAL RATE *of* MORTALITY *per* 1,000 *in* TOWN *and* COUNTRY DISTRICTS *of* ENGLAND *in each Quarter of the Years* 1887-85.

	Area in Statute Acres.	Population Estimated in the middle of 1887.	Quarters ending	Annual Rate of Mortality per 1,000 in each Quarter of the Years			
				1887.	Mean '81-86.	1886.	1885.
TOWN DISTRICTS. All Registration Sub-Districts three-fourths of the population of which, as enumerated in 1881, resided within the boundaries of Urban Sanitary Districts existing in 1886	3,688,436	18,041,365	March ..	21·0	22·4	23·3	22·1
			June	18·8	19·6	18·2	20·0
			Sept.	18·9	19·0	19·1	17·5
			Dec.	19·8	20·3	19·4	19·4
			Year	19·7	20·3	20·0	19·7
COUNTRY DISTRICTS. All the remaining Registration Sub-Districts of England and Wales—not coming within the above definition of Town Districts	33,550,915	10,205,786	Year	17·2	17·6	18·0	17·8
			March ..	19·8	20·3	22·0	21·3
			June	17·2	18·0	17·7	18·2
			Sept.	15·2	15·2	15·6	14·7
			Dec.	16·9	17·1	16·8	17·1

Note.—In calculating these rates of mortality corrections are made for inequalities in the numbers of de in the different quarters of the year. The annual rates are the means of the four quarterly rates.

D.—*Special Town Table:*—POPULATION; BIRTH-RATE *and* DEATH-RATE *in each Quarter of* 1887, *in* TWENTY-EIGHT *Large Towns.*

Cities and Boroughs.	Estimated Population in the Middle of the Year 1887.	Annual Rate to 1,000 Living during the Thirteen Weeks ending							
		2nd April. (1st Quarter.)		2nd July. (2nd Quarter.)		1st October. (3rd Quarter.)		31st December. (4th Quarter.)	
		Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
Twenty-eight towns	9,244,099	32·9	22·0	32·4	19·8	31·9	20·4	31·8	21·1
London	4,215,192	32·8	20·7	31·5	18·0	31·2	19·6	31·2	20·0
Brighton	118,186	27·6	16·8	24·8	16·3	25·2	18·1	25·5	16·3
Portsmouth	137,917	36·2	20·5	37·0	17·0	36·0	19·6	38·0	20·8
Norwich	92,848	35·4	22·5	35·3	22·0	31·2	18·9	33·8	18·3
Plymouth	77,127	31·9	27·6	32·0	20·3	31·1	21·7	31·3	21·3
Bristol	223,695	30·1	24·3	30·7	18·9	29·9	17·6	28·2	20·8
Wolverhampton	80,847	35·1	23·5	32·9	20·5	31·9	21·8	33·0	20·9
Birmingham	441,095	32·0	21·2	33·0	18·2	30·9	19·4	31·2	20·1
Leicester	143,153	32·5	20·5	32·9	16·2	34·3	22·3	31·6	19·0
Nottingham	224,230	35·2	18·2	34·7	18·0	32·1	17·9	31·0	20·7
Derby	94,006	30·7	17·1	30·0	15·2	29·9	15·3	29·4	20·9
Birkenhead	97,703	32·3	19·3	34·5	20·1	30·8	22·8	32·2	21·7
Liverpool	592,991	31·0	26·0	31·5	24·8	30·9	22·5	31·2	21·5
Bolton	112,354	32·8	20·4	33·5	18·1	31·1	20·1	32·6	26·6
Manchester	377,529	36·9	30·6	36·3	30·2	34·9	26·4	35·4	27·4
Salford	218,658	32·8	21·2	33·7	23·0	31·0	22·9	30·2	21·5
Oldham	134,158	29·7	24·4	31·8	25·0	32·7	20·9	31·0	25·0
Blackburn	116,844	36·7	25·5	34·9	24·5	36·2	23·4	35·3	28·6
Preston	102,283	38·9	26·3	39·8	25·4	38·0	31·2	37·2	28·8
Huddersfield	90,034	27·4	26·9	26·6	25·7	28·3	17·7	28·5	21·6
Halifax	79,207	26·9	23·0	28·5	18·4	28·7	18·6	29·7	23·8
Bradford	224,507	27·1	21·0	28·2	18·4	29·3	20·5	26·2	19·8
Leeds	345,080	32·0	23·0	34·5	19·6	33·7	20·3	33·0	21·3
Sheffield	316,288	33·0	21·4	31·5	20·9	33·1	20·7	34·2	23·3
Hull	196,855	33·1	21·3	32·7	18·8	33·2	19·6	32·4	17·2
Sunderland	129,684	35·7	21·4	35·8	18·3	34·8	19·4	32·1	19·8
Newcastle	157,048	37·9	25·7	38·5	24·4	39·8	24·9	40·2	26·0
Cardiff	104,580	42·3	24·8	41·5	22·4	40·3	19·8	40·5	20·6
Edinburgh	258,629	29·1	21·6	31·3	19·4	28·2	18·2	28·8	20·0
Glasgow	524,039	38·4	28·0	38·9	23·3	35·3	18·5	35·4	23·2
Dublin	353,082	29·4	31·0	29·5	28·7	26·8	30·9	26·2	31·9

E.—*Divisional Table:*—MARRIAGES *in the Year ending 30th September; and* BIRTHS *and* DEATHS *in the Year ending 31st December, 1887, as Registered Quarterly.*

1	2	3	4	5	6	7
DIVISIONS. (England and Wales.)	AREA* in Statute Acres.	Enumerated POPULATION, 1881.	MARRIAGES in Quarters ending			
			31st December, 1886.	31st March, 1887.	30th June, 1887.	30th September, 1887.
		No.	No.	No.	No.	No.
ENGLD. & WALES....*Totals*	37,319,221	25,974,439	57,954	38,804	52,432	49,718
I. London	75,362	3,816,483	9,798	6,268	8,876	9,237
II. South-Eastern	3,994,431	2,487,076	5,414	3,178	4,432	4,390
III. South Midland	3,201,325	1,596,259	3,287	1,832	2,682	2,685
IV. Eastern	3,211,441	1,343,524	3,356	1,608	2,161	2,136
V. South-Western	4,981,170	1,859,198	3,629	2,545	3,516	3,055
VI. West Midland	3,945,460	3,029,319	6,558	4,145	5,797	5,391
VII. North Midland	3,535,445	1,637,865	3,599	2,133	3,534	2,756
VIII. North-Western	1,998,914	4,108,184	8,930	7,160	8,910	8,657
IX. Yorkshire	3,702,384	2,894,759	6,595	4,725	6,072	5,630
X. Northern	3,547,947	1,624,213	3,281	2,733	3,343	3,058
XI. Monmthsh. & Wales	5,125,342	1,577,559	3,507	2,477	3,109	2,723

8	9	10	11	12	13	14	15	16
DIVISIONS. (England and Wales.)	BIRTHS in each Quarter of 1887 ending				DEATHS in each Quarter of 1887 ending			
	31st March.	30th June.	30th September.	31st December.	31st March.	30th June.	30th September.	31st December.
	No.	No.	No.	No.	No.	No.	No.	No.
ENGLD. & WALES....*Totals*	219,515	226,371	222,382	217,749	143,346	128,436	125,003	133,792
I. London	34,474	33,050	32,735	32,816	21,744	18,849	20,545	20,951
II. South-Eastern	19,393	19,813	20,157	19,745	11,894	10,315	10,142	10,697
III. South Midland	13,315	13,863	13,439	13,048	7,977	6,834	6,850	7,226
IV. Eastern	11,904	12,415	11,561	11,713	6,999	6,278	5,895	6,528
V. South-Western	13,179	13,722	13,559	13,264	10,187	8,340	7,115	8,040
VI. West Midland	25,165	26,051	25,022	24,855	16,531	13,993	12,974	14,413
VII. North Midland	14,060	14,656	14,459	13,901	8,055	7,507	7,731	8,175
VIII. North-Western	36,633	37,942	37,207	36,789	25,981	24,413	23,831	25,442
IX. Yorkshire	23,790	24,613	24,903	24,686	16,076	15,204	14,769	15,852
X. Northern	14,697	16,143	15,609	14,672	8,620	8,297	8,248	8,843
XI. Monmthsh. & Wales	12,905	14,103	13,731	12,760	9,282	8,406	6,903	7,625

---

* These are revised figures, and will be found to differ somewhat from those first published.

F.—*General Meteorological Table,*

[Abstracted from the particulars supplied to the

1887. Months.	Temperature of										Elastic Force of Vapour.		Weight of Vapour in a Cubic Foot of Air.	
	Air.			Evaporation.		Dew Point.		Air—Daily Range.		Water of the Thames				
	Mean.	Diff. from Average of 116 Years.	Diff. from Average of 46 Years.	Mean.	Diff. from Average of 46 Years.	Mean.	Diff. from Average of 46 Years.	Mean.	Diff. from Average of 46 Years.		Mean.	Diff. from Average of 46 Years.	Mean.	Diff. from Average of 46 Years.
	°	°	°	°	°	°	°	°	°		In.	In.	Grs.	Gr.
Jan.......	35·6	−1·0	−2·8	34·8	−2·1	32·9	−2·0	9·6	+0·1	—	·187	−·014	2·2	−0·2
eb.......	38·8	0·0	−0·8	36·7	−1·3	33·8	−1·6	12·9	+1·8	—	·194	−·015	2·3	−0·1
Mar. ...	37·6	−3·5	−4·1	35·3	−4·0	32·1	−3·9	14·1	−0·6	—	·182	−·033	2·1	−0·4
Means...	37·3	−1·5	−2·6	35·6	−2·5	32·9	−2·5	12·2	+0·4	—	·188	−·021	2·2	−0·3
April ...	44·1	−2·0	−3·0	40·5	−3·4	36·3	−4·2	19·8	+1·4	—	·214	−·039	2·5	−0·4
May......	49·8	−2·7	−2·7	46·6	−2·2	43·5	−1·5	16·7	−3·8	—	·283	−·015	3·2	−0·2
June ...	60·9	+2·6	+2·1	55·8	+1·3	51·3	+0·7	23·7	+2·7	—	·380	+·010	4·2	0·0
Means...	51·6	−0·7	−1·2	47·6	−1·4	43·7	−1·7	20·1	+0·1	—	·292	−·015	3·3	−0·2
July......	66·5	+4·8	+4·3	59·4	+1·7	53·7	−0·2	26·4	+5·4	—	·413	−·005	4·6	−0·2
Aug. ...	62·5	+1·6	+1·1	56·2	−1·2	50·8	−3·1	23·8	+4·0	—	·371	−·048	4·1	−0·7
Sept. ...	54·0	−2·6	−3·1	50·9	−3·1	47·9	−3·3	16·0	−2·2	—	·334	−·046	3·8	−0·6
Means...	61·0	+0·9	+0·8	55·5	−0·9	50·8	−2·2	22·1	+2·4	—	·373	−·033	4·2	−0·5
Oct.......	45·0	−4·6	−5·0	42·6	−2·9	39·7	−6·2	14·3	−0·2	—	·244	−·066	2·8	−1·2
Nov. ...	40·8	−1·6	−2·7	39·5	−0·6	37·8	−1·6	9·4	−2·1	—	·227	−·018	2·7	−0·2
Dec. ...	38·1	−1·0	−1·8	36·3	−0·3	33·9	−2·6	8·7	−0·7	—	·195	−·023	2·3	−0·4
Means...	41·3	−2·4	−3·2	39·5	−1·3	37·1	−3·5	10·8	−1·0	—	·222	−·036	2·6	−0·6

Note.—In reading this table it will be borne in mind that the sign (−) minus signifies

About London the mean daily temperature of the air was below its average on nearly every day throughout October and till the 25th day of November, the mean daily deficiency for these fifty-six days was 5°·4; from 26th November to 4th December it was above the average, the mean daily excess was 1°·4; from 5th December to the 31st was generally below the average, mean daily deficiency was 3°·8.

The mean temperature of the air for October was 45°·0, being 4°·6 and 5°·0 below the average of one hundred and sixteen years and forty-six years respectively; it was 8°·3, 1°·1, and 3°·9, lower than in 1886, 1885, and 1884 respectively.

The mean temperature of October was lower than that of any October back to the year 1817. The following are all the cases of a temperature as low or lower back to the year 1771:—In the year 1784 it was 43°·9; in the year 1786 it was 44°·7; in the year 1817 it was 45°·0.

for the Year ended 31*st December*, 1887.

Registrar-General by James Glaisher, Esq., F.R.S., &c.]

Degree of Humidity.		Reading of Barometer.		Weight of a Cubic Foot of Air.		Rain.		Daily Horizontal Movement of the Air.	Reading of Thermometer on Grass.					1887. Months.
									Number of Nights it was			Lowest Reading at Night.	Highest Reading at Night.	
Mean.	Diff. from Average of 46 Years.	Mean.	Diff. from Average of 46 Years.	Mean.	Diff. from Average of 46 Years.	Amnt.	Diff. from Average of 72 Years.		At or below 30°.	Between 30° and 40°.	Above 40°.			
		In.	In.	Grs.	Grs.	In.	In.	Miles.				°	°	
92	+ 2	29·831	+ ·084	558	+ 4	1·15	–0·76	238	22	9	0	14·9	38·0	January
84	– 1	30·145	+ ·356	561	+ 8	0·53	–1·05	315	18	9	1	13·7	42·0	Feb.
83	0	29·891	+ ·136	557	+ 7	1·35	+0·16	288	19	12	0	14·6	35·0	March
86	0	29·956	+ ·193	559	+ 6	Sum 3·03	Sum –1·97	Mean 280	Sum 59	Sum 30	Sum 1	Lowest 13·7	Highst 42·0	Means
75	– 5	29·818	+ ·072	548	+ 5	1·75	–0·01	343	15	15	0	19·1	38·5	April
80	+ 1	29·834	+ ·047	542	+ 2	1·72	–0·36	289	4	18	9	23·3	47·0	May
72	– 3	30·013	+ ·207	533	+ 1	1·23	–0·74	244	0	7	23	33·2	51·7	June
76	– 4	29·888	+ ·108	541	+ 3	Sum 4·70	Sum –1·11	Mean 292	Sum 19	Sum 40	Sum 32	Lowest 19·1	Highst 51·7	Means
64	–11	29·866	+ ·069	525	– 3	1·29	–1·22	248	0	3	28	37·3	58·5	July
66	–10	29·807	+ ·023	528	– 1	2·34	–0·01	210	0	8	23	33·4	55·9	August
80	– 1	29·759	– ·039	536	+ 3	2·22	–0·21	283	3	15	12	27·0	51·7	Sept.
70	– 7	29·811	+ ·018	530	0	Sum 5·85	Sum –1·44	Mean 247	Sum 3	Sum 26	Sum 63	Lowest 27·0	Highst 58·5	Means
82	– 7	29·916	+ ·208	549	+ 9	1·03	–1·76	255	19	5	7	18·0	47·9	October
89	– 1	29·530	– ·212	547	– 1	3·78	+1·44	281	11	16	3	15·5	42·2	Nov.
85	– 5	29·676	– ·113	543	– 9	1·47	–0·52	308	20	10	1	16·7	40·8	Dec.
85	– 4	29·707	– ·039	546	0	Sum 6·28	Sum –0·84	Mean 281	Sum 50	Sum 31	Sum 11	Lowest 15·5	Highs 47·9	Means

below the average, and that the sign (+) plus signifies above the average.

The mean temperature of the air for November was 40°·8, being 1°·6 and 2°·7 below the average of one hundred and sixteen years and forty-six years respectively; it was 3°·2, 2°·5, and 1°·6 lower than in 1886, 1885, and 1884 respectively, and lower than any November back to 1879, when it was 38°·3.

The mean temperature of the air for December was 38°·1, being 1°·0 and 1°·8 below the average of one hundred and sixteen years and forty-six years respectively; it was 1°·6 higher than in 1886, 0°·8 and 2°·9 lower than in 1885 and 1884 respectively.

The mean daily range of temperature in October was 14°·3, being 0°·2 smaller than the average. In November it was 9°·4, being 2°·1 smaller than the average, and in December it was 8°·7, being 0°·7 smaller than the average.

The mean temperature in October was 9°·0 colder than in September; in November it was 4°·2 colder than in October; in December it was 2°·7 colder than in November.

No. II.—SCOTLAND.

BIRTHS, DEATHS, AND MARRIAGES, IN THE YEAR ENDED 31ST DECEMBER, 1887.

I.—*Serial Table:—Number of* BIRTHS, DEATHS, *and* MARRIAGES *in Scotland, and their Proportion to the Population estimated to the Middle of each Year, during each Quarter of the Years* 1887-83 *inclusive.*

	1887.		1886.		1885.		1884.		1883.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
1st Quarter—										
Births	30,589	3·11	31,880	3·27	30,878	3·20	30,889	3·21	31,342	3·32
Deaths	20,036	2·04	20,516	2·11	21,936	2·27	19,115	1·99	22,012	2·33
Marriages ..	6,249	0·63	6,229	0·64	6,408	0·66	6,679	0·70	6,530	0·69
Mean Temperature	38°·6		35°·3		37°·7		40°·0		38°·2	
2nd Quarter—										
Births	32,698	3·29	33,381	3·39	32,404	3·33	33,897	3·52	32,420	3·40
Deaths	18,685	1·88	18,555	1·88	18,793	1·93	18,751	1·95	20,386	2·14
Marriages ..	6,083	0·61	6,091	0·62	6,363	0·65	6,673	0·69	6,814	0·71
Mean Temperature	49°·6		47°·7		47°·6		48°·7		48°·6	
3rd Quarter—										
Births	30,602	3·04	31,603	3·17	31,274	3·17	32,294	3·32	30,087	3·12
Deaths	16,885	1·68	16,263	1·63	15,981	1·62	17,555	1·81	16,537	1·72
Marriages ..	5,643	0·56	5,612	0·56	5,679	0·58	5,729	0·59	5,890	0·62
Mean Temperature	55°·7		54°·9		54°·0		56°·6		55°·0	
4th Quarter—										
Births	30,486	3·03	31,063	3·12	31,554	3·20	31,961	3·29	30,163	3·17
Deaths	18,894	1·88	18,288	1·84	17,893	1·82	19,707	2·03	17,932	1·86
Marriages ..	6,876	0·68	6,537	0·66	6,806	0·69	6,980	0·72	7,621	0·79
Mean Temperature	39°·9		41°·8		40°·3		41°·3		42°·1	
Year—										
Population.	3,991,499		3,949,393		3,907,736		3,866,521		3,825,744	
Births	124,375	3·12	127,927	3·24	126,110	3·23	129,041	3·34	124,462	3·25
Deaths	74,500	1·87	73,622	1·86	74,603	1·91	75,128	1·94	76,867	2·01
Marriages ..	24,851	0·62	24,469	0·62	25,256	0·65	26,061	0·67	26,855	0·70

II.—*Special Average Table:—Number of Births, Deaths, and Marriages in Scotland and in the Town and Country Districts for each Quarter of the Year ending* 31st *December,* 1887, *and their Proportion to the Population; also the Number of Illegitimate Births, and their Proportion to the Total Births.*

Registration Groups of Districts.	Total Births.			Illegitimate Births.			Deaths.			Marriages.		
	Number.	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every
1st Quarter—												
SCOTLAND	30,589	3·11	32	2,668	8·7	11·4	20,036	2·04	49	6,249	0·63	158
Principal towns	12,728	3·30	30	1,054	8·3	12·0	8,995	2·33	43	3,000	0·78	128
Large ,,	3,728	3·51	28	236	6·3	15·8	2,287	2·15	47	741	0·69	145
Small ,,	6,401	3·05	33	535	8·4	11·9	4,018	1·92	52	1,248	0·60	166
Mainland rural	6,927	2·75	36	790	11·4	8·8	4,170	1·66	60	1,085	0·43	230
Insular ,,	810	2·54	39	53	6·5	15·3	566	1·77	57	175	0·55	182
2nd Quarter—												
SCOTLAND	32,698	3·29	30	2,705	8·3	12·1	18,685	1·88	53	6,083	0·61	164
Principal towns	13,403	3·44	29	1,064	7·9	12·6	8,199	2·10	48	2,830	0·73	138
Large ,,	4,017	3·62	28	293	7·3	13·7	2,331	2·10	48	681	0·61	163
Small ,,	6,948	3·30	30	561	8·1	12·4	3,697	1·76	57	1,181	0·56	178
Mainland rural	7,628	3·03	33	744	9·8	10·3	3,959	1·57	64	1,334	0·53	189
Insular ,,	702	2·18	46	43	6·1	16·3	499	1·55	65	57	0·18	566
3rd Quarter—												
SCOTLAND	30,602	3·04	33	2,521	8·2	12·1	16,885	1·68	60	5,643	0·56	178
Principal towns	12,826	3·13	32	953	7·7	12·9	7,253	1·84	54	2,918	0·74	135
Large ,,	3,687	3·29	30	261	7·1	14·1	2,012	1·79	56	676	0·60	166
Small ,,	6,431	3·02	33	518	8·0	12·4	3,621	1·70	59	1,084	0·51	196
Mainland rural	7,329	2·88	35	730	10·0	10·0	3,561	1·40	71	902	0·35	282
Insular ,,	829	2·54	39	59	7·1	14·1	438	1·34	74	63	0·19	518
4th Quarter—												
SCOTLAND	30,486	3·03	33	2,471	8·1	12·3	18,894	1·88	53	6,876	0·68	146
Principal towns	12,362	3·14	32	937	7·6	13·2	8,225	2·09	48	3,024	0·77	130
Large ,,	3,600	3·21	31	234	6·5	15·4	2,280	2·03	49	740	0·66	152
Small ,,	6,496	3·05	33	522	8·0	12·4	3,827	1·80	56	1,337	0·63	159
Mainland rural	7,216	2·83	35	741	10·3	9·7	4,055	1·59	63	1,628	0·64	156
Insular ,,	812	2·49	40	37	4·6	22·0	507	1·55	64	147	0·45	222

Population of Scotland.

Population.	Scotland.	Principal Towns.	Large Towns.	Small Towns.	Mainland Rural.	Insular Rural.
By Census of 1881	3,735,573	1,409,260	404,302	784,654	1,006,969	130,388
Estimated to the middle of 1887	3,991,499	1,562,427	445,206	843,668	1,010,798	129,400

III.—*Bastardy Table:—Proportion of* ILLEGITIMATE *in every Hundred* BIRTHS *in the Divisions and Counties of* SCOTLAND, *during each quarter of the Year ending* 31*st December*, 1887; *with the Corresponding Figures for* 1886 *added for Comparison.*

Divisions and Counties.	Per Cent. for the Quarters ending 1887.				Per Cent. for the Quarters ending 1886.			
	31st March.	30th June.	30th Sept.	31st Dec.	31st March.	30th June.	30th Sept.	31st Dec.
SCOTLAND	8·7	8·3	8·2	8·1	8·5	7·8	8·4	8·2
Divisions—								
Northern	8·9	8·5	9·0	7·2	8·8	8·2	8·4	6·0
North-Western........	7·5	6·4	7·9	5·7	6·6	6·2	6·2	4·7
North-Eastern	15·2	14·5	12·9	13·2	15·9	13·3	13·8	14·3
East Midland	8·7	8·5	8·5	8·6	8·5	8·3	9·0	8·4
West Midland	6·4	6·5	6·5	5·9	7·2	5·9	6·3	6·1
South-Western........	7·2	6·8	6·5	6·5	6·5	6·2	7·0	6·6
South-Eastern	8·4	7·6	7·9	7·8	8·0	7·3	7·1	8·0
Southern	13·5	13·5	14·7	15·0	14·0	12·7	14·6	13·3
Counties—								
Shetland	4·6	3·7	3·7	5·8	7·3	4·3	5·0	4·1
Orkney	9·9	9·0	6·8	6·4	7·6	7·4	7·6	3·8
Caithness................	11·7	9·7	15·1	10·3	14·9	12·6	12·4	10·1
Sutherland	7·5	10·6	6·9	3·4	4·0	5·6	5·1	3·8
Ross and Cromarty	5·7	4·7	4·3	4·9	5·1	6·2	5·3	2·4
Inverness	9·0	8·0	11·2	6·4	7·9	6·3	7·1	7·0
Nairn	9·5	12·5	5·8	10·0	16·0	9·6	16·9	14·3
Elgin	15·1	14·9	11·6	17·3	16·0	15·7	12·6	14·8
Banff	19·9	18·6	14·6	12·7	18·7	13·3	16·1	16·5
Aberdeen................	14·7	13·4	12·9	12·8	15·3	13·2	13·6	14·3
Kincardine	10·5	14·8	12·0	11·9	15·8	11·7	12·1	9·6
Forfar	10·9	10·5	9·5	9·3	9·9	9·1	9·8	10·3
Perth	9·5	8·8	9·5	10·1	8·1	8·6	12·1	7·5
Fife	5·8	6·0	6·4	6·9	6·6	7·0	6·0	6·5
Kinross	2·4	3·8	4·1	6·7	9·8	14·3	5·4	7·3
Clackmannan	3·3	5·8	8·2	8·4	6·1	4·8	9·6	6·7
Stirling	7·4	6·5	5·8	6·4	7·9	5·6	6·1	7·3
Dumbarton	4·6	5·3	5·9	4·0	4·6	4·5	5·8	5·0
Argyll	7·3	7·8	8·1	7·8	9·8	8·7	6·7	5·7
Bute	5·9	7·8	6·9	6·2	7·0	3·6	9·7	6·7
Renfrew	6·4	5·8	5·3	5·6	5·3	5·0	5·7	6·0
Ayr	8·3	9·2	6·2	7·1	7·4	6·9	9·0	7·5
Lanark	7·2	6·5	6·9	6·6	6·6	6·3	6·9	6·6
Linlithgow	7·6	6·3	4·9	7·0	8·9	7·3	6·3	7·4
Edinburgh	8·3	7·7	8·0	7·6	7·7	7·3	7·2	7·7
Haddington	5·5	6·9	8·4	8·1	6·2	4·6	7·7	7·7
Berwick	9·9	10·1	12·1	11·8	15·6	10·1	6·7	13·0
Peebles	16·3	5·9	9·0	9·1	7·7	8·0	4·6	14·9
Selkirk	9·7	9·2	7·2	8·0	4·7	7·8	8·4	7·3
Roxburgh	8·8	12·2	10·9	11·2	9·3	10·4	8·4	11·1
Dumfries................	14·5	13·7	13·3	13·6	12·8	14·3	14·9	13·9
Kirkcudbright	14·4	13·9	14·8	18·7	17·1	12·4	17·7	12·7
Wigtown................	17·3	14·6	22·2	18·6	19·9	12·6	18·9	15·2

IV.—*Divisional Table:*—MARRIAGES, BIRTHS, *and* DEATHS *Registered in the Year ended* 31*st December*, 1887.

(Compiled from the Registrar-General's Quarterly Returns.)

1 DIVISIONS. (Scotland)	2 AREA in Statute Acres.	3 POPULATION, 1881. (*Persons.*)	4 Marriages.	5 Births.	6 Deaths.
		No.	No.	No.	No.
SCOTLAND .... *Totals*	19,639,377	3,735,573	24,851	124,375	74,500
I. Northern	2,261,622	123,984	535	2,987	1,978
II. North-Western........	4,739,876	165,856	646	4,139	2,654
III. North-Eastern	2,429,594	418,250	2,471	13,422	7,401
IV. East Midland	2,790,492	602,421	3,733	18,175	11,540
V. West Midland	2,693,176	283,460	1,555	9,271	5,246
VI. South-Western........	1,462,397	1,385,447	10,642	52,083	30,945
VII. South-Eastern	1,192,524	546,658	4,164	18,432	10,880
VIII. Southern	2,069,696	209,497	1,105	5,866	3,856

No. III.—GREAT BRITAIN AND IRELAND.

SUMMARY *of* MARRIAGES, *in the Year ended* 30*th September*, 1887; *and of* BIRTHS *and* DEATHS, *in the Year ended* 31*st December*, 1887.

(Compiled from the Quarterly Returns of the respective Registrars-General.)

COUNTRIES.	[000's omitted.] Area in Statute Acres.	[000's omitted.] Population, 1881. (*Persons.*)	Marriages.	Per 1,000 of Population.	Births.	Per 1,000 of Population.	Deaths.	Per 1,000 of Population.
		No.	No.	Ratio.	No.	Ratio.	No.	Ratio.
England and Wales	37,319,	25,974,	198,908	7·6	886,017	34·1	530,577	20·4
Scotland	19,639,	3,736,	24,512	6·5	124,375	33·2	74,500	19·9
Ireland	20,323,	5,175,	21,077	4·0	112,496	21·7	88,711	17·1
GREAT BRITAIN AND IRELAND	77,281,	34,885,	244,497	7·0	1,122,888	32·2	693,788	19·9

Note.—The numbers against Ireland represent the marriages, births, and deaths that the local registrars have *succeeded* in recording; but how far the registration approximates to absolute completeness, does not at present appear to be known. It will be seen that the Irish ratios of marriages, births, and deaths are much under those of England and Scotland.—ED. *S. J.*

Trade of United Kingdom, for the Years 1886-82.—*Declared Value of the Total Exports of* **Foreign** *and* **Colonial** *Produce and Manufactures to each Foreign Country and British Possession.*

Merchandise Exported to the following Foreign Countries, &c.	[000's omitted.] 1886.	1885.	1884.	1883.	1882.
I.—Foreign Countries.	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark, & Iceland, & Heligoland	3,592,	4,001,	4,451,	4,473,	4,674,
Central Europe; viz., Germany, Holland and Belgium	22,566,	23,685,	26,332,	25,787,	25,916,
Western Europe; viz., France, Portugal, (with Azores, Madeira, &c.), and Spain, (with Gibraltar and Canaries)	7,914,	9,266,	11,027,	13,480,	14,070,
Southern Europe; viz., Italy, Austrian Empire, Greece, Ionian Islands, and Malta	1,560,	1,423,	1,829,	1,975,	1,738,
Levant; viz., Turkey, Roumania,* Syria and Palestine, and Egypt	868,	978,	950,	914,	773,
Northern Africa; viz., Tripoli, Tunis, Algeria, and Morocco	119,	141,	92,	64,	142,
Western Africa	166,	215,	219,	262,	218,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	—	—	—	—	—
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	62,	46,	72,	61,	61,
South Sea Islands	—	—	—	—	—
China, including **Hong Kong** and Japan	566,	855,	970,	784,	678,
United States of America	10,783,	9,101,	8,312,	9,360,	7,738,
Mexico and Central America	126,	93,	96,	89,	124,
Foreign West Indies and Hayti	886,	774,	792,	839,	841,
South America (Northern), New Granada, Venezuela and Ecuador	69,	56,	75,	72,	90,
„ **(Pacific)**, Peru, Bolivia, Chili, and Patagonia	253,	264,	289,	282,	336,
„ **(Atlantic)**, Brazil, Uruguay, and Argentine Confed.	489,	401,	489,	555,	578,
Other countries (unenumerated)	121,	112,	124,	121,	104,
Total—Foreign Countries	50,140,	51,411,	56,119,	59,118,	58,081,
II.—British Possessions.					
British India, Ceylon, and Singapore	1,371,	1,802,	1,706,	1,712,	1,722,
Austral. Cols.—New South Wales and Victoria, So. Aus., W. Aus., Tasm., and N. Zealand	2,622,	2,937,	2,909,	2,623,	3,086,
British North America	1,152,	1,168,	1,034,	954,	983,
„ W. Indies with Btsh. Guiana & Honduras	278,	315,	355,	374,	327,
Cape and Natal	323,	358,	431,	443,	582,
Brt. W. Co. of Af., Ascension and St. Helena	71,	87,	77,	71,	83,
Mauritius	31,	31,	40,	74,	54,
Channel Islands	210,	197,	189,	202,	209,
Other possessions	36,	53,	82,	67,	66,
Total—British Possessions	6,094,	6,948,	6,823,	6,520,	7,112,
General Total £	56,234,	58,359,	62,942,	65,638,	65,193,

---

* Wallachia and Moldavia to 1878, and Roumania in 1879.

Trade of United Kingdom, 1887-86-85.—*Distribution of* **Exports*** *from United Kingdom, according to their Declared Real Value; and the Declared Real Value (Ex-duty) of* **Imports** *at Port of Entry, and therefore including Freight and Importer's Profit.*

Merchandise (*excluding Gold and Silver*) Imported from, and Exported to, the following Foreign Countries, &c.	[000's omitted.] 1887. Imports from	1887. *Exports to*	1886. Imports from	1886. *Exports to*	1885. Imports from	1885. *Exports to*
	£	£	£	£	£	£
I.—FOREIGN COUNTRIES:						
Northern Europe; viz., Russia, Sweden, Norway, Denmark & Iceland, & Heligoland	31,299,	9,252,	28,729,	9,425,	33,466,	9,614
Central Europe; viz., Germany, Holland, and Belgium	64,453,	30,640,	60,930,	31,026,	63,149,	33,093
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	50,295,	20,310,	48,554,	19,665,	48,115,	20,858
Southern Europe; viz., Italy, Austrian Empire, Greece, Roumania, and Malta....	10,060,	11,518,	8,756,	9,894,	10,239,	10,185
Levant; viz., Turkey, Asiatic and European (including Cyprus), and Egypt	11,307,	8,638,	11,291,	8,763,	13,355,	9,616
Northern Africa; viz., Tripoli, Tunis, Algeria and Morocco	1,303,	718,	1,554,	823,	1,901,	869
Western Africa	1,122,	1,095,	1,075,	1,095,	1,247,	1,292
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	589,	617,	448,	469,	451,	811
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	3,210,	2,366,	4,102,	2,358,	4,262,	2,855
South Sea Islands	103,	94,	100,	87,	84,	88
China and Japan, including **Hong Kong**	8,756,	12,324,	10,220,	9,728,	10,047,	11,023
United States of America	82,932,	29,548,	81,368,	26,822,	86,158,	21,977
Mexico and Central America	1,836,	2,077,	1,704,	1,580,	1,795,	1,466
Foreign West Indies, Hayti, &c.	356,	2,428,	334,	2,455,	1,216,	2,245
South America (Northern), New Granada, Venezuela, and Ecuador	605,	2,325,	663,	1,645,	619,	1,126
" (Pacific), Peru, Bolivia, Chili, and Patagonia	3,983,	2,782,	4,110,	2,530,	4,559,	2,177
" (Atlantic) Brazil, Uruguay, and Argentine Republic	7,831,	13,805,	5,551,	12,512,	6,588,	11,412
Whale Fisheries; Grnlnd., Davis' Straits, Southn. Whale Fishery, Falkland Islands, and French Possessions in North America	166,	40,	155,	39,	144,	26
Total—Foreign Countries	280,206,	150,577,	269,644,	140,916,	287,395,	140,733
II.—BRITISH POSSESSIONS:						
British India, Ceylon, and Singapore	37,621,	33,674,	38,580,	34,015,	38,755,	32,182
Austral. Cols.—N. So. W., Victoria & Queensld.	14,223,	14,383,	13,223,	16,598,	16,018,	18,245
" " So. Aus., W. Aus., Tasm., N. Zealand, & Fiji Islands	9,172,	5,333,	7,744,	5,786,	10,098,	6,903
British North America	10,542,	8,091,	10,395,	7,887,	10,329,	7,207
" W. Indies with Btsh. Guiana & Honduras	3,265,	2,812,	3,166,	2,422,	4,185,	2,497
Cape and Natal	5,082,	4,991,	4,658,	3,308,	5,134,	3,826
Brt. W. Co. of Af., Ascension and St. Helena	760,	679,	813,	805,	880,	663
Mauritius	165,	288,	310,	261,	310,	263
Channel Islands	946,	575,	887,	466,	800,	512
Total—British Possessions	81,776,	70,821,	79,776,	71,548,	86,509,	72,298
General Total .... £	361,982,	221,398,	349,420,	212 464,	373,904,	213,031

---

* *i.e.*, British and Irish produce and manufactures.

IMPORTS.—(United Kingdom.)—**For the Years 1887-86-85-84-83.**—*Declared Real Value (Ex-duty), at Port of Entry (and therefore including Freight and Importer's Profit), of Articles of Foreign and Colonial Merchandise Imported into the United Kingdom.*

[000's omitted.]

FOREIGN ARTICLES IMPORTED.		1887.	1886.	1885.	1884.	1883.
		£	£	£	£	£
RAW MATLS.—*Textile*, &c.	Cotton, Raw ...	39,897,	37,792,	36,044,	44,114,	44,279,
	Wool	25,983,	24,308,	26,248,	28,566,	26,718,
	Silk*...............	13,302,	13,269,	12,631,	15,561,	14,282,
	Flax	2,708,	2,416,	3,188,	3,028,	2,877,
	Hemp and Jute	5,847,	4,737,	5,459,	5,679,	6,877,
	Indigo	1,673,	1,891,	2,133,	2,484,	2,467,
		89,410,	84,413,	85,703,	99,432,	97,500,
„ „ *Various.*	Hides	3,132,	3,610,	3,863,	3,885,	3,804,
	Oils	2,326,	2,434,	2,987,	3,031,	3,461,
	Metals	16,618,	15,040,	16,287,	16,806,	13,997,
	Tallow	1,074,	1,297,	1,582,	2,097,	2,100,
	Timber...............	11,989,	12,531,	15,245,	15,027,	17,138,
		35,139,	34,912,	39,964,	40,846,	40,500,
„ „ *Agrcltl.*	Guano	186,	538,	242,	439,	722,
	Seeds	6,992,	6,862,	7,838,	7,574,	9,085,
		7,178,	7,400,	8,080,	8,013,	9,807,
TROPICAL, &c., PRODUCE.	Tea	9,859,	11,360,	10,718,	10,567,	11,769,
	Coffee and Chich.	4,334,	3,412,	3,380,	3,826,	4,992,
	Sugar & Molasses	16,515,	15,998,	18,447,	19,854,	25,086,
	Tobacco	3,409,	3,782,	3,901,	2,777,	2,900,
	Rice	1,878,	2,466,	2,173,	2,683,	3,181,
	Fruits	5,771,	5,515,	6,015,	5,609,	4,217,
	Wines	5,468,	5,135,	5,125,	5,347,	5,460,
	Spirits	2,012,	2,032,	1,967,	1,890,	1,744,
		49,246,	49,700,	51,726,	52,553,	59,349,
FOOD	Grain and Meal.	47,819,	43,225,	52,749,	47,563,	67,040,
	Provisions	40,526,	38,013,	39,859,	41,696,	42,518,
		88,345,	81,238,	92,608,	89,259,	109,558,
Remainder of Enumerated Articles		52,630,	52,606,	55,457,	58,247,	61,719,
TOTAL ENUMERATED IMPORTS		321,948,	310,269,	333,538,	348,350,	378,433,
Add for UNENUMERATED IMPORTS (say)		39,987,	39,112,	40,296,	41,424,	47,171,
TOTAL IMPORTS		361,935,	349,381,	373,834,	389,774,	425,604,

* "Silk," inclusive of manufactured silk, "not made up."

EXPORTS.—(United Kingdom.)—**For the Years 1887-86-85-84-83.**—*Declared Real Value, at Port of Shipment, of Articles of* BRITISH *and* IRISH *Produce and Manufactures Exported from the United Kingdom.*

[000's omitted.]

BRITISH PRODUCE, &c., EXPORTED.		1887.	1886.	1885.	1884.	1883.
		£	£	£	£	£
MANFRS.—*Textile.*	Cotton Manufactures ..	59,577,	57,365,	55,113,	58,925,	62,937,
	„ Yarn	11,379,	11,489,	11,859,	13,812,	13,511,
	Woollen Manufactures	20,585,	19,738,	18,847,	20,131,	18,320,
	„ Yarn	3,970,	4,406,	4,383,	3,892,	3,267,
	Silk Manufactures	2,326,	2,234,	1,957,	2,173,	2,426,
	„ Yarn	439,	436,	376,	613,	707,
	Linen Manufactures	5,455,	5,257,	4,962,	5,178,	5,439,
	„ Yarn	939,	935,	985,	1,137,	1,059,
		104,670,	101,860,	98,482,	105,861,	107,666,
„ *Sewed.*	Apparel	3,941,	3,902,	4,171,	3,936,	3,636,
	Haberdy. and Mllnry.	2,349,	2,094,	2,308,	2,853,	3,879,
		6,290,	5,996,	6,479,	6,789,	7,515,
METALS, &c.	Hardware	2,920,	2,847,	2,849,	3,141,	3,756,
	Machinery	11,146,	10,134,	11,075,	13,051,	13,444,
	Iron	25,000,	21,723,	21,717,	24,488,	28,584,
	Copper and Brass........	3,005,	2,904,	3,468,	4,021,	4,005,
	Lead and Tin	1,147,	1,057,	885,	891,	1,077,
	Coals and Culm	10,176,	9,837,	10,632,	10,852,	10,642,
		53,394,	48,502,	50,626,	56,444,	61,508,
Ceramic Manufcts.	Earthenware and Glass	2,911,	2,775,	2,696,	2,887,	3,280,
Indigenous Mnfrs. and Products.	Beer and Ale................	1,678,	1,583,	1,645,	1,642,	1,816,
	Butter	156,	165,	176,	205,	212,
	Cheese	57,	51,	52,	61,	59,
	Candles	181,	202,	200,	214,	148,
	Salt..............................	525,	592,	673,	613,	645,
	Spirits	1,018,	890,	859,	794,	789,
	Soda	—	—	—	—	—
		3,615,	3,483,	3,605,	3,529,	3,669,
Various Manufcts.	Books, Printed	1,175,	1,117,	1,143,	1,172,	1,176,
	Furniture	—	—	—	—	—
	Leather Manufactures	2,469,	2,223,	2,307,	2,299,	2,398,
	Soap	451,	446,	473,	548,	449,
	Plate and Watches	329,	368,	328,	322,	338,
	Stationery	831,	855,	854,	848,	883,
		5,255,	5,009,	5,105,	5,189,	5,244,
Remainder of Enumerated Articles		30,886,	30,725,	31,826,	34,389,	28,146,
Unenumerated Articles...............................		14,377,	14,014,	14,212,	17,839,	22,802,
TOTAL EXPORTS.......................		221,398,	212,364,	213,031,	232,927,	239,830,

SHIPPING.—(United Kingdom.)—*Account of Tonnage of Vessels Entered and Cleared with Cargoes, from and to Various Countries, during the* **Years** *ended December,* **1887-86-85.**

Countries from whence Entered and to which Cleared.	Total British and Foreign.					
	1887.		1886.		1885.	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
Foreign Countries.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Russia { Northern ports	1,399,469	1,109,601	1,194,582	1,116,107	1,407,281	1,110,765
Russia { Southern ,,	549,432	75,636	402,106	178,723	516,941	221,232
Sweden	1,307,060	999,113	1,265,266	947,835	1,366,389	997,250
Norway	999,524	639,788	940,546	639,530	890,500	625,188
Denmark	289,554	919,132	269,711	880,207	267 468	891,771
Germany	1,902,238	2,959,094	1,832,189	2,969,410	2,015,290	2,882,245
Holland	1,932,427	1,514,146	1,674,672	1,493,401	1,639,986	1,555,616
Belgium	1,358,670	1,177,311	1,306,893	1,106,017	1,264,928	1,100,683
France	2,131,241	3,635,215	2,056,258	3,571,726	2,018,560	3,759,023
Spain	2,609,906	1,164,346	2,093,085	1,109,555	2,063,011	1,047,850
Portugal	157,785	390,859	146,989	396,906	160,284	388,678
Italy	244,777	2,185,861	231,674	1,966,114	221,028	1,792,035
Austrian territories	64,585	94,808	65,896	89,373	99,042	126,949
Greece	91,356	122,152	68,181	130,029	90,859	121,728
Roumania	351,013	101,235	279,841	95,694	270,897	82,142
Turkey	174,891	392,879	187,295	376,549	252,358	318,588
Egypt	308,436	860,493	317,076	688,236	418,831	800,428
United States of America	4,682,158	3,524,116	4,657,118	3,450,665	4,711,323	3,143,000
Mexico, Foreign West Indies, and Central America	94,172	406,999	107,589	358,957	175,729	378,292
Brazil	218,918	582,265	179,213	572,105	205,500	583,081
Peru	88,597	72,128	81,666	53,224	92,225	64,603
Chili	146,711	202,423	105,460	193,761	125,232	220,036
China	196,130	78,754	210,457	104,022	196,506	81,151
Other countries	939,189	1,565,180	1,016,637	1,319,876	1,074,334	1,405,899
Total, Foreign Countries	22,238,239	24,773,534	20,690,400	23,808,022	21,544,502	23,698,233
British Possessions.						
North American Colonies	1,205,884	791,785	1,289,206	806,723	1,294,134	751,165
East Indies, including Ceylon, Singapore, and Mauritius	1,320,998	2,107,242	1,454,786	1,992,699	1,444,560	2,163,557
Australia and New Zealand	532,144	856,153	521,644	938,114	641,682	997,338
West Indies	75,947	255,485	93,200	240,270	139,662	188,398
Channel Islands	332,326	244,937	345,071	231,555	310,148	232,579
Other possessions	294,272	1,142,300	288,922	1,090,257	289,772	1,286,461
Total, British Possessions	3,761,571	5,397,902	3,992,829	5,299,618	4,119,958	5,619,498
Total Foreign Countries and British Possessions.						
Twelve Months ended December, { 1887	25,999,810	30,171,436	—	—	—	—
Twelve Months ended December, { '86	—	—	24,683,229	29,107,640	—	—
Twelve Months ended December, { '85	—	—	—	—	25,664,460	29,317,731

GOLD AND SILVER BULLION AND SPECIE.—(United Kingdom.) —*Declared Real Value of,* IMPORTED AND EXPORTED *for the* Years 1887-86-85.

[000's omitted.]

Countries.	1887.		1886.		1885.	
	Gold.	*Silver.*	Gold.	*Silver.*	Gold.	*Silver.*
Imported from—	£	£	£	£	£	£
Australia	321,	59,	2,726,	246,	3,737,	169,
S. America, Brazil, Mexico, W. Indies	2,982,	3,269,	2,006,	3,471,	2,351,	3,762,
United States	37,	2,214,	3,022,	1,697,	909,	2,751,
	3,340,	5,542,	7,754,	5,414,	6,997,	6,682,
France	1,926,	1,242,	1,350,	1,187,	1,787,	1,725,
Germany, Holland, Belg., and Sweden	710,	740,	590,	475,	1,802,	526,
Portugal, Spain, and Gibraltar	73,	124,	201,	92,	673,	150,
Malta and Egypt	2,222,	46,	1,237,	38,	202,	11,
China, with Hong Kong and Japan	1,064,	—	1,183,	—	1,235,	—
West Coast of Africa	148,	46,	137,	83,	232,	99,
All other Countries	462,	85,	940,	183,	946,	185,
Totals Imported	9,940,	7,825,	13,392,	7,472,	13,374,	9,378,
Exported to—						
France	24,	475,	1,181,	1,019,	118,	1,491,
Germany, Holland, Belg. & Sweden	2,676,	174,	1,653,	46,	3,722,	159,
Portugal, Spain, and Gibraltar	960,	205,	2,272,	246,	1,226,	314,
	3,660,	854,	5,106,	1,311,	5,066,	1,964,
B. India, China, Hong Kong and Japan	848,	6,326,	387,	5,614,	424,	7,493,
United States	1,761,	35,	2,995,	3,	299,	6,
South Africa	715,	68,	145,	—	—	18,
S. America, Brazil, Mexico, W. Indies	1,935,	318,	4,551,	28,	1,944,	31,
All other Countries	404,	206,	550,	268,	4,198,	340,
Totals Exported	9,323,	7,807,	13,734,	7,224,	11,931,	9,852,
Excess of imports	617,	18,	—	248,	1,443,	—
,, exports	—	—	342,	—	—	474,

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES), *Weekly for* 1887.

Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)					
	Wheat.		Barley.		Oats.	
1887.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Jan. 1	35	–	25	11	17	–
„ 8	35	4	26	4	16	11
„ 15	36	3	26	8	17	4
„ 22	36	4	27	1	17	2
„ 29	35	5	26	7	17	1
Feb. 5	34	3	26	7	17	1
„ 12	33	6	25	7	16	10
„ 19	32	11	26	2	17	–
„ 26	32	7	25	0	16	11
March 5	32	9	25	1	16	2
„ 12	32	7	24	8	16	4
„ 19	32	11	24	4	16	4
„ 26	33	2	23	2	16	4
April 2	33	3	24	4	16	1
„ 9	32	8	23	11	15	8
„ 16	32	8	24	2	15	10
„ 23	32	6	23	2	16	3
„ 30	32	8	24	2	16	2
May 7	33	2	23	2	16	–
„ 14	33	6	22	–	16	7
„ 21	34	1	21	9	16	3
„ 28	34	6	23	1	16	9
June 4	35	–	23	9	16	7
„ 11	35	4	22	1	17	–
„ 18	35	1	21	10	17	4
„ 25	35	1	20	7	16	9
1887.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
July 2	35	–	20	10	17	6
„ 9	34	2	20	11	17	–
„ 16	34	–	20	5	16	9
„ 23	34	3	21	4	17	9
„ 30	34	3	21	8	17	1
Aug. 6	33	11	20	10	17	1
„ 13	33	3	20	7	16	10
„ 20	32	–	23	11	16	4
„ 27	30	10	24	5	16	3
Sept. 3	29	11	27	3	15	6
„ 10	29	1	26	10	14	10
„ 17	28	8	27	4	14	7
„ 24	28	9	28	–	14	11
Oct. 1	28	5	28	10	14	10
„ 8	28	7	28	6	15	1
„ 15	29	3	29	–	15	3
„ 22	29	9	28	10	15	4
„ 29	30	1	29	7	15	5
Nov. 5	30	3	29	7	15	11
„ 12	30	6	29	6	15	5
„ 19	30	5	29	6	15	6
„ 26	30	9	29	6	15	11
Dec. 3	31	3	29	3	16	1
„ 10	31	2	29	–	15	11
„ 17	31	2	29	1	16	2
„ 24	30	10	28	11	15	10
„ 31	30	9	29	3	16	1

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES), *Summary of, for* 1887, *with those for* 1886, *added for Comparison.*

Average for	Per Imperial Quarter, 1887.						Per Imperial Quarter, 1886.					
	Wheat.		Barley.		Oats.		Wheat.		Barley.		Oats.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
January	35	8	26	6	17	1	29	10	29	–	18	5
February	33	3	25	10	16	11	29	5	28	8	19	–
March	32	10	24	2	16	3	29	10	28	–	19	4
First quarter	33	11	25	6	16	9	29	9	28	7	18	10
April	32	9	23	11	16	–	30	7	27	4	19	4
May	33	9	22	6	16	4	31	10	25	4	20	3
June	35	1	22	–	16	11	31	7	24	7	20	7
Second quarter	33	10	22	10	16	5	31	4	25	9	20	1
July	34	4	21	–	17	2	31	2	23	10	20	6
August	32	6	22	5	16	7	32	5	23	4	20	11
September	29	1	27	4	14	11	31	10	27	5	18	8
Third quarter	32	–	23	7	16	3	31	9	24	10	20	1
October	29	2	28	11	15	2	29	11	27	3	17	3
November	30	5	29	6	15	8	31	2	27	8	16	10
December	31	–	29	1	16	–	33	2	26	9	16	9
Fourth quarter	30	2	29	2	15	7	31	4	27	3	17	–
THE YEAR	32	6	25	3	16	3	31	–	26	7	19	–

REVENUE OF THE UNITED KINGDOM.

Net Produce in QUARTERS *and* YEARS *ended* 31*st* DEC., 1887-86-85-84.

[000's omitted.]

QUARTERS, ended 31st Dec.	1887.	1886.	1887.		Corresponding Quarters.	
			Less.	More.	1885.	1884.
	£	£	£	£	£	£
Customs	5,452,	5,557,	105,	—	5,319,	5,570,
Excise	7,850,	7,780,	—	70,	7,845,	8,100,
Stamps	3,180,	3,060,	—	120,	2,800,	3,160,
Taxes	35,	30,	—	5,	20,	25,
Post Office	2,370,	2,360,	—	10,	2,140,	1,980,
Telegraph Service	465,	445,	—	20,	410,	430,
	19,352,	19,232,	105,	225,	18,534,	19,265,
Property Tax	1,130,	1,350,	220	—	1,200,	845,
	20,482,	20,582,	325,	225,	19,734,	20,110,
Crown Lands	150,	130,	—	20,	130,	130,
Interest on Advances	21,	301,	280,	—	583,	282,
Miscellaneous	723,	802,	79	—	647,	596,
Totals	21,376,	21,815,	684,	245,	21,094,	21,118,
			NET DECR. £439,			

YEARS, ended 31st Dec.	1887.	1886.	1887.		Corresponding Years.	
			Less.	More.	1885.	1884.
	£	£	£	£	£	£
Customs	19,747,	20,066,	319,	—	20,139,	19,950,
Excise	25,550,	25,280,	—	270,	25,695,	26,527,
Stamps	12,385,	11,800,	—	585,	11,710,	11,700,
Taxes	2,940,	2,920,	—	20,	2,875,	2,860,
Post Office	8,580,	8,500,	—	80,	8,055,	7,850,
Telegraph Service	1,915,	1,780,	—	135,	1,750,	1,745,
	71,117,	70,346,	319,	1,090,	70,224,	70,632,
Property Tax	15,615,	16,100,	485,	—	12,635,	10,318,
	86,732,	86,446,	804,	1,090,	82,859,	80,950,
Crown Lands	390,	380,	—	10,	380,	380,
Interest on Advances	453,	1,084,	631,	—	1,302,	1,013,
Miscellaneous	2,788,	2,929,	141,	—	3,037,	3,167,
Totals	90,363,	90,839,	1,576,	1,100,	87,578,	85,510,
			NET DECR. £476,			

LONDON CLEARING; CIRCULATION, PRIVATE AND PROVINCIAL.

The London Clearing, and the Average Amount of Promissory Notes in Circulation in ENGLAND *and* WALES *on Saturday in each Week during the Year* **1887**; *and in* SCOTLAND *and* IRELAND, *at the Dates, as under.*

[0,000's omitted.]

ENGLAND AND WALES.					SCOTLAND.				IRELAND.		
DATES. *Saturday.*	*London:* Cleared in each Week on the preceding *Wednesday.*	Private Banks. (Fixed Issues, 3,17).	Joint Stock Banks. (Fixed Issues, 2,11).	TOTAL. (Fixed Issues, 5,28).	Average for Four Weeks ending	£5 and upwards	Under £5.	TOTAL. (Fixed Issues, 2,68).	£5 and upwards	Under £5.	TOTAL. (Fixed Issues, 6,35).
1887.	£	£	£	£	1887.	£	£	£	£	£	£
Jan. 1......	79,10	1,32	1,33	2,65							
„ 8......	169,58	1,33	1,36	2,69	Jan. 8...	2,05	4,18	6,23	3,42	2,93	6,36
„ 15......	105,78	1,35	1,36	2,71							
„ 22......	139,42	1,32	1,37	2,69							
„ 29......	95,70	1,29	1,32	2,61							
Feb. 5......	146,21	1,29	1,31	2,60	Feb. 5...	1,80	3,89	5,69	3,33	2,80	6,13
„ 12......	111,63	—	—	—							
„ 19......	156,68	1,25	1,29	2,54							
„ 26......	105,76	1,21	1,29	2,50							
Mar. 5......	105,23	1,25	1,30	2,55	Mar. 5...	1,58	3,54	5,12	3,28	2,67	5,96
„ 12......	102,56	1,20	1,30	2,50							
„ 19......	138,92	1,18	1,31	2,49							
„ 26......	101,92	1,19	1,32	2,51							
April 2......	124,35	1,24	1,36	2,60	April 2...	1,57	3,56	5,14	3,32	2,61	5,93
„ 9......	128,39	1,30	1,21	2,51							
„ 16......	77,24	1,28	1,21	2,49							
„ 23......	140,67	1,26	1,40	2,66							
„ 30......	89,96	1,26	1,40	2,66							
May 7......	146,76	1,27	1,24	2,51	May 7...	1,63	3,71	5,34	3,48	2,65	6,12
„ 14......	106,13	1,28	1,44	2,72							
„ 21......	133,68	1,28	1,42	2,70							
„ 28......	86,78	1,25	1,39	2,64	„ 28...	2,09	4,10	6,19	3,38	2,57	5,95
June 4......	135,37	1,24	1,43	2,67							
„ 11......	101,24	1,23	1,35	2,58							
„ 18......	134,60	1,21	1,32	2,53							
„ 25......	79,00	1,20	1,30	2,50	June 25...	1,95	3,99	5,93	3,19	2,49	5,68
July 2......	131,95	1,22	1,31	2,53							
„ 9......	136,66	1,24	1,33	2,57							
„ 16......	100,94	1,23	1,31	2,54							
„ 23......	136,35	1,20	1,29	2,49	July 23...	1,76	3,94	5,70	3,08	2,42	5,50
„ 30......	84,55	1,18	1,28	2,46							
Aug. 6......	117,25	1,18	1,28	2,46							
„ 13......	105,15	1,16	1,26	2,42							
„ 20......	121,24	1,14	1,25	2,39	Aug. 20...	1,71	3,85	5,57	2,94	2,42	5,36
„ 27......	89,04	1,13	1,24	2,37							
Sept. 3......	107,39	1,12	1,24	2,36							
„ 10......	114,45	—	—	—							
„ 17......	87,47	1,14	1,25	2,39	Sept. 17...	1,70	3,87	5,57	2,93	2,45	5,37
„ 24......	125,83	1,16	1,27	2,43							
Oct. 1......	87,81	1,22	1,30	2,52							
„ 8......	142,41	1,28	1,35	2,63							
„ 15......	103,48	—	—	—	Oct. 15...	1,78	3,89	5,66	3,16	2,68	5,85
„ 22......	139,99	1,27	1,36	2,63							
„ 29......	95,79	1,24	1,35	2,59							
Nov. 5......	137,96	1,25	1,36	2,61							
„ 12......	100,65	1,24	1,36	2,60	Nov. 12...	1,87	4,07	5,95	3,36	2,81	6,17
„ 19......	131,66	1,24	1,36	2,60							
„ 26......	102,83	1,22	1,35	2,57							
Dec. 3......	121,15	1,22	1,32	2,54							
„ 10......	110,89	1,20	1,30	2,50	Dec. 10...	2,03	4,22	6,25	3,28	2,83	6,11
„ 17......	93,92	1,19	1,29	2,48							
„ 24......	150,61	1,20	1,30	2,50							
„ 31......	86,05	1,19	1,18	2,37							

BANK OF ENGLAND.

Pursuant to the Act 7th and 8th Victoria, cap. 32 (1844)

[0,000's omitted.]

1	2	3	4	5	6	7
ISSUE DEPARTMENT.					COLLATERAL COLUMNS.	
Liabilities.		Assets.				
Notes Issued.	DATES. (Wednesdays.)	Government Debt.	Other Securities.	Gold Coin and Bullion.	Notes in Hands of Public. (Col. 1 minus col. 16.)	Minimum Rates of Discount at Bank of England.
£ Mlns.	1887.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	Per cnt.
33,76	Jan. 5	11,02	4,73	18,01	24,83	(End of 1886) 5
34,06	„ 12	11,02	4,73	18,31	24,46	1887.
34,47	„ 19	11,02	4,73	18,72	24,07	
35,18	„ 26	11,02	4,73	19,43	23,71	
35,82	Feb. 2	11,02	4,73	20,07	23,94	2 Feb. 4
36,09	„ 9	11,02	4,73	20,34	23,60	
36,94	„ 16	11,02	4,73	21,19	23,39	
37,44	„ 23	11,02	4,73	21,69	23,25	
37,62	Mar. 2	11,02	4,73	21,87	23,73	
37,98	„ 9	11,02	4,73	22,23	23,44	9 March ... 3½
38,32	„ 16	11,02	4,73	22,57	23,34	
39,02	„ 23	11,02	4,73	23,27	23,39	23 „ ... 3
39,05	„ 30	11,02	4,73	23,30	23,80	
38,57	April 6	11,02	4,73	22,82	24,76	
38,45	„ 13	11,02	4,73	22,70	24,50	13 April ... 2½
38,62	„ 20	11,02	4,73	22,87	24,42	
38,75	„ 27	11,02	4,73	23,00	24,35	27 „ ... 2
38,18	May 4	11,02	4,73	22,43	24,88	
37,62	„ 11	11,02	4,73	21,87	24,68	
37,75	„ 18	11,02	4,73	21,99	24,57	
37,98	„ 25	11,02	4,73	22,23	24,53	
37,92	June 1	11,02	4,73	22,17	24,92	
38,04	„ 8	11,02	4,73	22,29	24,78	
38,39	„ 15	11,02	4,73	22,64	24,43	
38,14	„ 22	11,02	4,73	22,39	24,29	
37,68	„ 29	11,02	4,73	21,93	24,96	
37,02	July 6	11,02	4,73	21,27	25,54	
36,90	„ 13	11,02	4,73	21,15	25,34	
36,89	„ 20	11,02	4,73	21,14	25,12	
36,17	„ 27	11,02	4,73	20,42	25,07	
35,42	Aug. 3	11,02	4,73	19,67	25,59	3 Aug. 3
35,18	„ 10	11,02	4,73	19,43	25,24	
35,22	„ 17	11,02	4,73	19,47	25,03	
35,03	„ 24	11,02	4,73	19,28	24,61	
35,17	„ 31	11,02	4,73	19,42	24,75	31 „ 4
34,79	Sept. 7	11,02	4,73	19,04	24,72	
34,73	„ 14	11,02	4,73	18,98	24,39	
34,97	„ 21	11,02	4,73	19,22	24,26	
35,08	„ 28	11,02	4,73	19,33	24,46	
35,05	Oct. 5	11,02	5,18	18,85	25,14	
34,94	„ 12	11,02	5,18	18,74	24,89	
34,97	„ 19	11,02	5,18	18,77	24,53	
35,03	„ 26	11,02	5,18	18,83	24,21	
35,16	Nov. 2	11,02	5,18	18,96	24,52	
35,28	„ 9	11,02	5,18	19,08	24,30	
35,24	„ 16	11,02	5,18	19,04	24,13	
35,21	„ 23	11,02	5,18	19,01	23,65	
35,24	„ 30	11,02	5,18	19,04	23,85	
35,29	Dec. 7	11,02	5,18	19,09	23,85	
35,41	„ 14	11,02	5,18	19,21	23,58	
35,38	„ 21	11,02	5,18	19,18	23,92	
34,96	„ 28	11,02	5,18	18,76	24,06	

—**Weekly Return.**

for Wednesday in each Week, during the Year **1887.**

[0,000's omitted.]

8	9	10	11	12	13	14	15	16	17	18
Banking Department.										
Liabilities.					Dates. (Wednesdys.)	Assets.				Totals of Liabilities and Assets.
Capital and Rest.		Deposits.		Seven Day and other Bills.		Securities.		Reserve.		
Capital.	Rest.	Public.	Private.			Govern-ment.	Other.	Notes.	Gold and Silver Coin.	
£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	1887.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.
14,55	3,27	9,00	23,95	,16	Jan. 5	17,93	22,78	8,93	1,30	50,94
14,55	3,36	4,63	23,82	,21	„ 12	16,83	18,85	9,60	1,28	46,56
14,55	3,37	4,19	23,72	,16	„ 19	15,18	19,10	10,40	1,31	45,99
14,55	3,37	3,70	23,51	,19	„ 26	13,68	18,78	11,47	1,40	45,33
14,55	3,40	3,67	23,85	,22	Feb. 2	13,53	18,93	11,88	1,36	45,70
14,55	3,41	4,76	22,98	,15	„ 9	13,13	18,76	12,49	1,48	45,86
14,55	3,43	6,23	22,68	,18	„ 16	13,13	19,03	13,55	1,37	47,08
14,55	3,44	7,94	22,97	,16	„ 23	13,13	20,35	14,19	1,39	49,06
14,55	3,75	8,91	24,13	,16	Mar. 2	13,63	22,57	13,89	1,41	51,40
14,55	3,76	9,57	22,89	,17	„ 9	14,14	20,87	14,54	1,39	50,84
14,55	3,77	10,51	23,06	,15	„ 16	14,14	21,44	14,98	1,49	52,05
14,55	3,78	10,19	24,09	,14	„ 23	14,14	21,56	15,63	1,43	52,76
14,55	3,78	10,54	23,73	,15	„ 30	14,21	21,83	15,25	1,47	52,76
14,55	3,11	8,20	25,06	,19	April 6	14,43	21,46	13,81	1,41	51,11
14,55	3,11	6,45	24,10	,16	„ 13	14,43	18,55	13,96	1,44	48,37
14,55	3,12	6,31	24,79	,19	„ 20	14,43	18,85	14,20	1,46	48,94
14,55	3,12	6,09	24,88	,20	„ 27	14,43	18,54	14,40	1,48	48,85
14,55	3,11	5,72	24,72	,18	May 4	14,75	18,74	13,30	1,48	48,27
14,55	3,11	4,38	26,20	,19	„ 11	15,25	18,76	12,94	1,48	48,43
14,55	3,12	4,77	26,07	,20	„ 18	15,28	18,80	13,18	1,47	48,73
14,55	3,12	4,98	26,11	,22	„ 25	15,43	18,67	13,45	1,44	48,99
14,55	3,06	4,75	26,06	,19	June 1	15,49	18,73	13,00	1,40	48,62
14,55	3,07	5,12	25,95	,20	„ 8	15,49	18,69	13,26	1,45	48,89
14,55	3,06	4,94	26,95	,19	„ 15	15,54	18,70	13,96	1,49	49,69
14,55	3,06	6,00	25,81	,15	„ 22	15,54	18,85	13,85	1,34	49,58
14,55	3,05	7,93	24,80	,15	„ 29	15,84	20,51	12,72	1,41	50,48
14,55	3,27	6,04	27,16	,18	July 6	17,44	20,97	11,48	1,32	51,21
14,55	3,27	4,63	26,85	,23	„ 13	17,49	19,19	11,56	1,30	49,54
14,55	3,28	4,01	27,75	,18	„ 20	17,19	19,54	11,77	1,28	49,78
14,55	3,29	3,60	27,24	,19	„ 27	17,19	19,26	11,10	1,31	48,86
14,55	3,34	3,17	25,78	,17	Aug. 3	16,60	19,29	9,83	1,29	47,01
14,55	3,34	2,91	24,73	,19	„ 10	15,35	19,10	9,94	1,34	45,73
14,55	3,37	3,86	23,73	,21	„ 17	15,20	18,99	10,19	1,34	45,72
14,55	3,38	4,18	23,57	,22	„ 24	15,20	18,92	10,42	1,38	45,92
14,55	3,71	4,05	23,43	,20	„ 31	15,20	19,08	10,42	1,27	45,97
14,55	3,71	4,23	21,92	,18	Sept. 7	14,04	19,17	10,07	1,30	44,58
14,55	3,72	4,12	21,93	,18	„ 14	13,04	19,81	10,34	1,31	44,50
14,55	3,73	4,94	21,63	,19	„ 21	13,05	19,92	10,71	1,36	45,04
14,55	3,73	4,97	22,02	,16	„ 28	12,75	20,79	10,62	1,26	45,42
14,55	3,05	6,72	22,04	,16	Oct. 5	13,91	21,44	9,91	1,27	46,53
14,55	3,09	3,55	23,48	,17	„ 12	13,76	19,78	10,05	1,26	44,85
14,55	3,10	3,50	23,02	,19	„ 19	12,96	19,68	10,44	1,29	44,37
14,55	3,10	4,03	22,37	,17	„ 26	12,66	19,48	10,82	1,26	44,22
14,55	3,10	3,45	22,36	,16	Nov. 2	12,36	19,43	10,64	1,19	43,61
14,55	3,09	3,27	22,59	,17	„ 9	12,50	18,91	10,98	1,28	43,67
14,55	3,10	3,37	22,40	,18	„ 16	12,41	18,80	11,11	1,27	43,59
14,55	3,11	4,22	21,98	,18	„ 23	12,41	18,91	11,46	1,26	44,04
14,55	3,06	4,14	22,14	,16	„ 30	12,41	18,94	11,39	1,32	44,06
14,55	3,06	4,49	22,55	,18	Dec. 7	13,41	18,65	11,44	1,33	44,83
14,55	3,07	4,70	23,67	,17	„ 14	14,01	18,98	11,83	1,35	46,17
14,55	3,07	5,52	22,69	,19	„ 21	14,01	19,26	11,46	1,30	46,03
14,55	3,07	5,46	22,37	,14	„ 28	14,01	19,53	10,90	1,16	45,60

FOREIGN EXCHANGES.—*Quotations as under,* LONDON *on Paris, Hamburg, and Calcutta;—and New York, Calcutta, and Hong Kong, on* LONDON, *for* 1887.

1	2	3	4	5	6	7	8	9
			Calcutta.				Price per Ounce.	
DATES. (Thursdays)	London on Paris. 3 m.d.	London on Hamburg. 3 m. d.	London on Calcutta.	Indian Council Bills. Minimum Price per Rupee.	New York on London. 60 d. s.	Hong Kong on London. 4 m. d.	Gold Bars (Fine).	Standard Silver in Bars.
1887.			*s.* *d.*	*d.*	Per cnt.	*s.* *d.*	*s.* *d.*	*d.*
Jan. 6	25·55	20·62	1 $5\frac{5}{8}$	$17\frac{13}{16}$	4·$80\frac{3}{4}$	3 $4\frac{3}{8}$	77 9	46
„ 20	25·$53\frac{3}{4}$	20·58	1 $5\frac{7}{8}$	$18\frac{1}{32}$	4·$82\frac{1}{4}$	3 $4\frac{5}{8}$	77 9	47
Feb. 3	25·$56\frac{1}{4}$	20·56	1 $5\frac{7}{8}$	18	4·85	3 $4\frac{1}{4}$	77 9	47
„ 17	25·$56\frac{1}{4}$	20·59	1 $5\frac{13}{16}$	$17\frac{27}{32}$	4·$85\frac{1}{2}$	3 $3\frac{1}{2}$	77 9	$46\frac{1}{16}$
Mar. 3	25·$56\frac{1}{4}$	20·59	1 $5\frac{5}{8}$	$17\frac{1}{2}$	4·$84\frac{1}{2}$	3 $2\frac{3}{4}$	77 9	46
„ 17	25·$53\frac{3}{4}$	20·54	1 $5\frac{1}{4}$	$17\frac{15}{32}$	4·$83\frac{3}{4}$	3 $2\frac{1}{8}$	77 9	$45\frac{1}{4}$
Apl. 14	25·$43\frac{3}{4}$	20·49	1 $4\frac{5}{8}$	$17\frac{7}{32}$	4·$85\frac{3}{4}$	3 2	77 9	$43\frac{3}{8}$
„ 28	25·$42\frac{1}{2}$	20·49	1 $4\frac{3}{4}$	$17\frac{1}{16}$	4·$86\frac{1}{2}$	3 $2\frac{1}{4}$	77 9	$44\frac{1}{8}$
May 12	25·$38\frac{3}{4}$	20·50	1 $4\frac{5}{8}$	$16\frac{3}{4}$	4·$85\frac{1}{2}$	3 $1\frac{1}{4}$	77 9	$43\frac{5}{8}$
„ 26	25·$36\frac{1}{4}$	20·50	1 $4\frac{5}{8}$	$16\frac{21}{32}$	4·$85\frac{3}{4}$	3 $1\frac{1}{8}$	77 9	$43\frac{9}{16}$
June 9	25·35	20·50	1 $4\frac{3}{8}$	$16\frac{3}{4}$	4·$84\frac{3}{4}$	3 $1\frac{3}{8}$	77 9	$43\frac{13}{16}$
„ 23	25·$36\frac{1}{4}$	20·50	1 $4\frac{3}{4}$	$16\frac{25}{32}$	4·$83\frac{3}{4}$	3 $1\frac{3}{4}$	77 9	$44\frac{1}{16}$
July 7	25·$38\frac{3}{4}$	20·48	1 $4\frac{3}{4}$	$16\frac{13}{16}$	4·$82\frac{1}{2}$	3 $1\frac{5}{8}$	77 9	$44\frac{1}{16}$
„ 21	25·$38\frac{3}{4}$	20·47	1 $4\frac{3}{4}$	$16\frac{21}{32}$	4·$82\frac{3}{4}$	3 2	77 9	$44\frac{7}{16}$
Aug. 4	25·$41\frac{1}{4}$	20·49	1 $4\frac{7}{8}$	$16\frac{15}{16}$	4·$81\frac{3}{4}$	3 $2\frac{1}{2}$	77 9	$44\frac{1}{4}$
„ 18	25·$48\frac{3}{4}$	20·55	1 $4\frac{13}{16}$	$17\frac{1}{32}$	4·$80\frac{3}{4}$	3 $2\frac{1}{2}$	77 9	$44\frac{1}{2}$
Sept. 1	25·50	20·55	1 $5\frac{1}{8}$	$17\frac{1}{8}$	4·80	3 $2\frac{1}{2}$	77 9	$44\frac{5}{16}$
„ 15	25·$53\frac{3}{4}$	20·61	1 $4\frac{7}{8}$	$17\frac{1}{16}$	4·$80\frac{1}{4}$	3 $2\frac{3}{8}$	77 9	$44\frac{3}{8}$
Oct. 6	25·$57\frac{1}{2}$	20·58	1 $4\frac{15}{16}$	$17\frac{1}{16}$	4·$79\frac{3}{4}$	3 $2\frac{3}{4}$	77 9	$44\frac{1}{2}$
„ 20 ...	25·$52\frac{1}{2}$	20·55	1 $4\frac{3}{4}$	$16\frac{7}{8}$	4·81	3 $2\frac{1}{2}$	77 9	$44\frac{3}{16}$
Nov. 3	25·$51\frac{1}{4}$	20·52	1 $4\frac{3}{4}$	$16\frac{25}{32}$	4·$81\frac{3}{4}$	3 2	77 9	$43\frac{7}{8}$
„ 17	25·50	20·53	1 $4\frac{5}{8}$	$16\frac{23}{32}$	4·82	3 2	77 9	$43\frac{7}{8}$
Dec. 1	25·$52\frac{1}{2}$	20·52	1 $4\frac{3}{4}$	$16\frac{27}{32}$	4·$81\frac{1}{4}$	3 $1\frac{3}{4}$	77 9	$43\frac{7}{8}$
„ 15	25·$51\frac{1}{4}$	20·51	1 $4\frac{7}{8}$	17	4·$81\frac{3}{4}$	3 2	77 9	$44\frac{1}{2}$

Vol. LI.] [Part II.

JOURNAL

OF THE ROYAL STATISTICAL SOCIETY,

JUNE, 1888.

PROGRESSIVE TAXATION *as* LEVIED *in* SWITZERLAND.

CANTONS BASEL-STADT, DE VAUD, *and* URI.

By R. H. INGLIS PALGRAVE, ESQ., F.R.S.

[Read before the Royal Statistical Society, 17th April, 1888.
DR. T. GRAHAM BALFOUR, F.R.S., a Vice-President, in the Chair.]

CONTENTS:

PAGE

I.—*Introduction* 227
- Economy in Administration not sufficiently regarded 227
- Simplicity in Plan often Unequal in Incidence 228
- Remarks by Mr. J. R. McCulloch, Sir G. C. Lewis, M. Leon Say, Mr. Gladstone, and Mr. J. S. Mill 228
- That system Vicious which sets Interest and Duty of individuals at Variance 233

II.—*System of Progressive Taxation in Switzerland* 233
- Occupations of Inhabitants, Cantons Basel-Stadt, de Vaud, and Uri . 233
- Taxation in these Three Cantons, 1862, 1872, and 1881 234
- Taxation in Switzerland Increased of late years 234
- Increase in Direct Taxation 234
- State Taxes per Head in Switzerland, 1862, 1872, and 1881 235
- Canton Basel-Stadt. System of Progressive Taxation dates from 1840 236
- Present Law in Canton Basel-Stadt dates from 1887, in Canton de Vaud from 1886, in Canton Uri from 1886 236

III.—*Canton Basel-Stadt* 236
- Principal Sections of Law of 1887 237
- Income Tax, Taxpayers. Division into Classes 237
- Property Tax, Taxpayers. Division into Classes 238
- Tax on Inheritances. Exemptions. Rates of Tax 238
- Population of Canton. Taxation in 1884 240
- Apportionment of Tax on Income and Earnings in 1884 240
- Alteration in Taxation by Law of 1887 240
- Taxable Capital in 1883, 1884, and 1885 241
- Comparison of Incidence of Property Tax, 1875, 1879, and 1883 242
- Alteration in Number of Taxpayers from 1875 to 1883. Alteration in Incidence of Property Tax, 1875 to 1879 242
- Properties above 40,000*l.*, 1875, 1879, and 1883 243
- Taxation of Yearly Earnings, Law of 1887 244
- Taxation of Income derived from Property. Rate per Cent., Law of 1887 245
- Effect of New System 245

CONTENTS—*Contd.*

PAGE
IV.—*Canton de Vaud* 245
Principal Sections of Law of 1886 245
General Regulations 246
Personal Tax. Basis of Taxation. Classes. Rates 246
Division of Property and Income into Classes 246
Rates of Tax 247
Income Derived from Property 247
Exemptions and Deductions Allowed 248
Property Tax. Division into Classes 248
Rate of Tax on Income derived from Property 251
Rate of Tax on Income from Earnings. Deductions Allowed according to Number in Family 252
Real Property, Amount of Tax Payable by the Taxpayers in the different Classes 254
Number of Classes in which a Taxpayer may be Taxed 254
Number and Classes of Taxpayers 255
V.—*Canton Uri* 256
Principal Sections of Law of 1886 256
Poll Tax 256
Property on which Tax is Charged 256
Property Tax. Division into Classes 256
Income Tax. Division into Classes 257
Income Tax. Proportion per Cent. of Tax on different Amounts of Income 257
Differences in System in the three Cantons 258
VI.—*Progressive Taxation in England* 258
Rates of Income Tax imposed by Mr. Pitt in 1799, and by Mr. Addington in 1803 258
Abatements Allowed in Income Tax at present time 259
Triple Assessments. Mr. Pitt 260
VII.—*General Conclusions* 264
Abatements preferable to Progressive Taxation 265
M. Leon Say on System in force in Switzerland 265
Luxuries should be Taxed, but danger of Tax on Capital 267

LIST OF TABLES.

I.—Swiss Census of 1880. Principal Occupations of Inhabitants, Cantons Uri, Basel-Stadt, and de Vaud 233
II.—Taxation per Head of Population, Cantons Uri, Basel-Stadt, and de Vaud, 1862, 1872, and 1881 234
III.—Switzerland. State Taxes per Head of Population, 1862, 1872, and 1881 235
IV.—Canton Basel-Stadt. Division of Property into Classes 238
V.— „ Division of Income into Classes 239
VI.— „ Taxation in 1884 240
VII.— „ Apportionment and Classes Charged with Taxes on Income and Earnings, 1884 240
VIII.— „ Present and Future Incidence of Taxation 241
IX.— „ Amount of Taxable Capital (*Steuer Kapital*) 241
X.— „ Town District (*Stadt Bezirk*). Comparison of Incidence of Property Tax in 1875, 1879, and 1883 242
XI.— „ Alterations in Incidence of Property Tax, 1875-83 242
XII.— „ Alterations in Incidence of Property Tax, 1875-89 243
XIII.— „ Properties above 40,000*l.* 244

CONTENTS—*Contd.*

LIST OF TABLES—*Contd.*

			PAGE
XIV.—	Canton Basel-Stadt.	Total Taxation Proposed by Law of 1887, on Income derived from Property and Earnings	244
XV.—	„	Income from Property. Rate per Cent.	245
XVI.—	Canton de Vaud.	Division of Property into Classes. Law of 1886-87	246
XVII.—	„	Division of Income into Classes. Law of 1886-87	247
XVIII.—	„	Rate for Personal Tax, according to the Class of the Taxpayer. Law of 1886-87	247
XIX.—	„	Tax on Real Property (*Impôt Foncier*) in 1886, and the Alteration by the Law of 1886-87	249
XX.—	„	Tax on Capital (*Capitaux*) in 1886, and the Alteration by the Law of 1886-87	250
XXI.—	„	Tax on Pensions and Income derived from Property (*Pensions, Rentes, Usufructs*) in 1886, and the Alteration by the Law of 1886-87	251
XXII.—	„	Taxation on Income derived from Earnings in 1886, and the Alteration made by the Law of 1886-87; with the Rates on Bachelors and Married Men, and the Deductions made for Family Charges, for Children from *one* to *twelve* in number	252
XXIII.—	„	Taxpayers. Real Property Divided into Three Classes	254
XXIV.—	„	Number and Value of Personal and Real Estates divided into Seven Classes	255
XXV.—	Canton Uri.	Property Tax. Rates of Tax	256
XXVI.—	„	Tax on Profits. Income Tax. Rates of Tax	257
XXVII.—	„	Division of Income Tax into Classes. Rate of Income Tax, and Proportion per Cent. of Amount of Income Tax to Income	257

I.—*Introduction.*

THE requirements of modern times have entirely changed the old way of regarding the purposes to which the revenue derived from taxation should be applied. Much more is expected now from the State in the way of providing for the wants of the people than formerly. There is no need here to recapitulate the heads of expenditure. It is the method by which taxation is raised, not the mode in which the funds provided by it are expended, that I propose to ask you to consider with me this evening. Expenditure increases almost continually. The statesman who reminded the House of Commons now-a-days as Burke did of the truth of the old adage, "*magnum vectigal est parsimonia,*" might obtain a burst of momentary and evanescent applause, but the stream of lavish expenditure would continue to flow unchecked. And yet there probably never was a time in which a firm and economical grasp of the strings of the national money bag was more strongly required than at the present in this country. It is not mere saving alone, for its own sake, that I would advocate. Judicious outlay, whether on the part of the public or of individuals, produces a most remunerative return. Taxation levied in a judicious manner may call forth a spirit either of increased exertion, or of additional economy, by means of which the sum required by the State may be more than replaced. But at the present time taxation is rather regarded as a mere money raising machine than anything else. This is the special feature in the modern system of taxation to which I desire to call your attention—the more direct the method is the better, in the opinions of many.

This was not always the opinion of economists of great celebrity in their day. "If I were called on," said Arthur Young, "to define a good system of taxation, it should be that of bearing "lightly on an infinite number of points, heavily on none. In "other words, that simplicity in taxation is the greatest additional "weight that can be given to taxes, and ought, in every country, to "be sedulously avoided. By a system of simplicity in taxation, let it "be exerted in whatever method, whether on land, on persons, or "on consumption, there will always be classes of people much "lighter taxed than other classes; and this inequality will throw "an oppressive burden on those who are most exposed to the "operation of whatever tax is chosen."

Mr. J. R. McCulloch adds to this the following observations: "Sir George C. Lewis having quoted this passage in the debate in "the House of Commons on the budget of 1857, gave it the "additional weight of his own high authority. 'That opinion,' "said he, 'though contrary to much that we hear at the present "'day, seems to me to be full of wisdom, and to be a most useful "'practical guide in the arrangement of a system of taxation.' "Had we kept it in view," Mr. McCulloch continues, "during the "last few years our financial system would have been, at this "moment, in a comparatively sound and healthy condition."—"Taxation and Funding System," McCulloch, p. 233.

The plan of imposing taxation on a few articles only, naturally leads on to the idea of concentrating the whole charge on one point. This system, so vigorously opposed by Mr. McCulloch, has lately received a considerable extension in Switzerland. But we must not think that all foreign economists are unanimous on this point. M. Leon Say has devoted a great deal of attention to the subject. He has discussed it in his book entitled "Les Solutions "Démocratiques de la question des Impôts," which contains the substance of his recent conferences held at the School of Political Science. I may be permitted to translate the words with which M. Leon Say brings his remarks to a close, the importance of which are enhanced by the high office which M. Say has borne in his country, and by his long experience in public affairs: "There "cannot, according to my idea, be a good system of finance in a "country where the advanced school of democratic socialists bears "rule, and where that school is in possession of power. The "finances can only be well regulated in a country in which the "State knows how to place a check on its requirements, and "resolves not to intervene in industrial affairs. It is however not "difficult to understand that in order to do much a large expenditure is needful, and that in order to produce the means for a "large expenditure new taxes must constantly be added to those "that exist. The new taxes may be disastrous if they strike at "the capital of the country, and these are the taxes which appear "foreshadowed. Above and beyond its power of contribution "a people has, and can only have, one reserve alone, its accumulated wealth, and its annual savings. It is needful to defend "energetically this final reserve against those who by laying hold "of it would, consciously or not, give the signal of the irremediable downfall of our magnificent country."

There are two other authorities well known in England whose remarks on taxation of this description I should like to cite before undertaking the examination of the mode of taxation adopted in those three of the cantons of Switzerland which will form the subject of my address to you this evening; these authorities are Mr. Gladstone and Mr. J. S. Mill.

Mr. Gladstone's career, as Chancellor of the Exchequer in this country, is very closely connected with the income tax. He continued it in 1853, and he proposed to carry on the finances of the country without its assistance in 1874. He has therefore considered it from various points of view. A very large part, about half, of Mr. Gladstone's budget speech of 1853 is occupied with the income tax. While continuing it for the time, Mr. Gladstone expressed a very strong opinion that it was not advisable to continue it as a permanent tax. "It is not adapted," Mr. Gladstone said, "for a permanent portion of your fiscal system, unless you "can by reconstruction remove what are called its inequalities. "Even, however, if you could remove its inequalities, a question "into which we will patiently examine, there would still remain in "my mind at least objections to it of the gravest character." . . . "Now it is said that gross inequality is the characteristic of the "tax, and that it ought not to be levied, that it is unjust to levy "it upon precarious and realised income alike."

Into this latter point, the possibility of making a distinction between precarious and fixed incomes, Mr. Gladstone went at some length. He showed the difficulty of appraising business incomes fairly; thus while "some few trades may be worth as much as "twenty-five years' purchase, there are others not worth more than "five, four, or three years' purchase." If any can be worth twenty-five years' purchase, many, it may parenthetically be observed, are not worth anything like three. Mr. Gladstone then proceeded to compare various life incomes, from government offices, from life interests, from professional exertions, from annuities. Mr. Gladstone examined these cases one by one; he then admitted "that the "operation of the income tax when taken alone is severe upon "intelligence and skill as compared with property;" and having done all this, he stated that he could not recommend any scheme the object of which was to differentiate the tax as between different classes in the community. "I frankly own my total inability to "meet the feeling which has been excited upon the subject of the "income tax, by any attempts to vary the rate of the tax according "to the source of income; nay more, I think that I should be "guilty of a high political offence if I attempted it." This was Mr. Gladstone's opinion on the subject in the year 1853. He is apparently of the same opinion now. Mr. Gladstone referred in his article on "Lecky's History of England," in the number of the "Nineteenth Century" for June, 1887, to his budget speech of 1853, from which we have quoted above, and to his proposal to relinquish it in 1874. Mr. Gladstone referred in this article to the preparations made for the abolition of the tax, through successive reductions of the rate.

With regard to relinquishing it, he observes that "in 1874, for "the first time since 1845, the opportunity arrived. The nation "had its opportunity and took its choice. It may have been wise "or unwise, but it was made by competent authority. The result "is told in our present expenditure of 90 millions." Mr. Gladstone went on to say, "with the proposal to repeal the income tax came "a proposal to reconstruct and enlarge the death duties. Direct "taxation of a kind most vexatious to trade and industry was to be "removed; direct taxation the least of all unfavourable to trade "and industry, and going, as a direct tax should whenever "possible go, straight to property, was to be imposed." It appears from the context that while Mr. Gladstone was willing in 1874, as he expressed himself in 1853, to abolish the income tax, he was not willing to differentiate it. In the August number, 1887, of the same magazine, the "Nineteenth Century," Mr. Gladstone referred to the subject again in an article entitled "Mr. Lecky and Political "Morality." His remarks on the subject are as follows:—

"The Aberdeen administration, of which I was an original "member, had made no promise whatever on the permanency of "the tax. It was in order to avoid egotism that I recited with

" extreme brevity the pledge of 1853. I am now driven, however " reluctantly, into somewhat greater length. The greater mission " of that Government, as stated by the Prime Minister in the House " of Lords, was to restore finance. The Tory party under the " guidance of the Tory Government, and probably two-thirds of " the Liberal party from conviction and preference, favoured the " differentiation of the tax. The school of Peel was convinced " that this meant financial confusion. The Chancellorship of the " Exchequer was the post of danger. It was offered to me. I " endeavoured to persuade my honoured friend Sir James Graham " to take it. He had passed 60, his health was no longer strong, " and he declined. My first duty was to examine, with extreme " labour, a subject which Mr. Lecky appears to comprehend by the " facile method of innate ideas. My next was to ask the cabinet " to adopt a plan which handled the income tax in a manner " known by us to be unacceptable at the time to a very large " majority of the House of Commons. My third was to propose the " plan to parliament. Parliament threw aside the ruinous scheme " of differentiation, and also gave the tax not as before for one " year, but for seven, upon an elaborate argument from the " Government to show that in all likelihood the impost could be " dispensed with at a future date. It was a bargain of honour " with the House of Commons."

Mr. Gladstone's opinions as to the income tax are clear. He neither wishes that it should form a permanent part of our fiscal system, nor that it should be differentiated.

The other English authority whose opinion on the income tax I desire to quote is Mr. John Stuart Mill. He says:—

" Setting out then from the maxim that equal sacrifices ought " to be demanded from all, we have next to inquire whether this " is in fact done by making each contribute the same percentage " on his pecuniary means. Many persons maintain the negative, " saying that a tenth part taken from a small income is a heavier " burden than the same fraction deducted from one much larger: " on this is grounded the very popular scheme of what is called a " graduated property tax, viz., an income tax in which the percentage rises with the amount of the income."

Mr. Mill proceeds to examine some of the arguments on which the proposal is founded; he then continues:—

" Both in England and on the Continent a graduated property " tax (*l'impôt progressif*) has been advocated on the avowed " ground that the State should use the instrument of taxation " as a means of mitigating the inequalities of wealth. I am as " desirous as any one that means should be taken to diminish " those inequalities, but not so as to relieve the prodigal at the "expense of the prudent. To tax the larger incomes at a higher "percentage than the smaller, is to lay a tax on industry and "economy; to impose a penalty on people for having worked "harder and saved more than their neighbours. It is not the "fortunes that are earned, but those which are unearned, that it is "for the public good to place under limitation. A just and wise "legislation would abstain from holding out methods for dissipating "rather than saving the earnings of honest exertion."—J. S. Mill, "Principles of Political Economy," book v, chap. 2, sec. 3.

The reference to unearned fortunes in the extract given above, includes apparently both inherited property and the growth in value arising from the "unearned increment" which Mr. Mill was given to discussing.

With regard to the first point, inherited property, Mr. Mill expresses his opinions as follows: "The principle of graduation "(as it is called), that is of levying a larger percentage on a "larger sum, though its application to general taxation would be, "in my opinion, objectionable, is both just and expeditious as "applied to legacy and inheritance duties." Without entering into any discussion as to the fairness or otherwise of this form of tax, it is advisable to remark that the amount of taxation which can safely be imposed on inheritances is a good deal smaller in reality than appears possible in theory. A slight addition, comparatively speaking, in the weight of taxation on the devolution of property, would lead to evasions which would probably cause the net receipts from the tax in the higher rate, to be below their amount at the lower. This would be the result with the larger fortunes, while many hardships would be inflicted on widows and others left to carry on the struggle of life with scanty means, unless the scale was most carefully graduated and left at a moderate amount in the lower divisions. With regard to the "unearned increment," logical fairness would require that if an "increment" accrued to the advantage of the State, a "decrement" should likewise be met at its expense. The old proverb, "as broad as it is long," would be realized in this case. There are many forms of property which seem to provide the financier with a firm basis for taxation, which are found in practice to be entirely unavailable.

I must not leave this branch of the subject without adverting to the fact that the real weight of a tax sometimes falls on entirely different classes from those on whom it was intended to be imposed. In theory, a tax on income and property arranged in proportion to the means of the possessors, appears as good a method for obtaining the amounts needed for purposes of administration as could be designed. In practice, it is found that it is never desirable to rest too heavily on this foundation: a tax on profits tends to diminish the power to accumulate capital, and without constant accumulations of fresh capital, no country can permanently remain prosperous. A heavy tax on the income of the wealthier classes appears at first sight one designed in the interests of the working classes. But if a really heavy tax, it would probably prove to be the worst enemy of the wage earner, by drying up the source from which wages can be paid. Again, in other directions the effect would be injurious. A tax on property tends to hinder an outlay on improvements. Here too the labouring man is the first to suffer. Without improvements employment for the labourer must remain stagnant, and wages probably will remain stagnant also. Hence, though property and income may, and should, bear their fair share of the burden of taxation, every attempt to raise this share beyond the proper level will inevitably recoil not so much on the propertied classes as on the wage earners. As was well said by McCulloch, "every system of taxation is radically vicious that sets the interest "and the duty of individuals at variance."

II.—*Systems of Progressive Taxation in Switzerland.*

The systems under which direct taxation is levied in some of the cantons of Switzerland would certainly not have received any commendations from Mr. McCulloch. I propose to give three examples, all of fiscal arrangements made in recent years, in the cantons of Uri, Basel-Stadt, and Waadt, better known as canton de Vaud. All three have been enacted quite of late years, cantons de Vaud and Uri in 1886, canton Basel-Stadt in 1887.

These three cantons differ very greatly from each other as to the principal occupations of their inhabitants, and doubtless also as to their accumulated and actual wealth. The following statement, derived from the federal census of 1880, shows the occupations of the inhabitants:—

TABLE I.—*Swiss Census of* 1880. *Principal Occupations of Inhabitants of Cantons Uri, Basel-Stadt, and de Vaud. Proportions per* 1,000 *of Total.*

Occupations	Cantons.		
	Uri. 1	Basel-Stadt. 2	Vaud. 3
Cultivation of the soil	451	43	471
Industry	138	528	270
Commerce	72	176	75
Transport	274	69	40
Public administration, arts, and sciences	25	63	49
Personal services	5	30	11
Persons without occupation	85	91	84
Total	1,000	1,000	1,000

The differences in the main occupations followed in these three cantons doubtless indicates very different social conditions between them. In cantons Basel-Stadt and de Vaud there is something of a leisured class among the persons stated to be without occupation, and though the number employed in personal services is never high in Switzerland, it is larger in these same cantons than in Uri.

TABLE II.—*Taxation per Head of Population, Cantons Uri, Basel-Stadt, and de Vaud,* 1862, 1872, *and* 1881.

Cantons.	Direct.		Indirect.		Total Taxation.
	Francs.	Proportion per Cent. to Total.	Francs.	Proportion per Cent. to Total.	Francs.
1862.					
Uri	—	—	11·67	100	11·67
Basel-Stadt	10·47	40	16·75	60	27·22
De Vaud	2·95	23	9·61	77	12·38
1872.					
Uri	—	—	4·93	100	4·93
Basel-Stadt	26·50	64	15·00	36	41·50
De Vaud	4·46	28	11·30	72	15·76
1881.					
Uri	2·39	27	6·52	73	8·81
Basel-Stadt	24·30	51	23·00	49	47·30
De Vaud	8·50	43	11·30	57	19·80

The proportion between direct and indirect taxation will be altered by the recent laws regulating direct and progressive taxation.

The difference shown in the taxation of these cantons is quite as considerable as among the occupations. Basel-Stadt is the heaviest taxed canton per head in Switzerland, and de Vaud is the third—Geneva, with 43·80 frs., coming between the two; Uri, though not by any means the lowest taxed canton, for Obwalden, the larger of the two divisions collectively forming the canton of Unterwalden, which only pays 3·99 frs. per head, occupies that position—is yet considerably below the average.

Taxation in Switzerland generally, as in almost every other civilised country of Europe, has become heavier of late years. The following statement, Table III, shows the amount of taxes paid to the State per head of the population at the dates of 1862, 1872, and 1881. Compared with twenty years ago, direct taxation has more than doubled, though the proportion of direct to indirect taxation is now slightly less than it was ten years since.

The population of these cantons was, according to the census of December, 1880:—

	Inhabitants.
Uri	23,694
Basel-Stadt	65,101
De Vaud	238,730

and of the Confederation at the same date 2,846,102.

TABLE III.—SWITZERLAND. *State Taxes per Head of the Population,* 1862, 1872, *and* 1881.

Year.	Direct.		Indirect.		Total Francs.
	Francs.	Proportion per Cent. to Total.	Francs.	Proportion per Cent. to Total.	
1862	2·47	28	6·45	72	8·92
'72	4·64	44	5·99	56	10·63
'81	6·12	42	8·42	58	14·54

On comparing this statement with Table II, showing the proportion of direct to indirect taxation in the cantons of Uri, Basel-Stadt, and de Vaud, it will be seen that in the last date mentioned, 1881, direct taxation in Basel-Stadt was considerably above the average, in de Vaud was very nearly the average, and in Uri a great deal below the average of the whole of Switzerland. In 1872 these proportions had been heavier in Basel-Stadt and lighter in de Vaud, while in Uri direct taxation was not brought into the fiscal system till 1881.

This table, with a good deal of the other information I have received, is derived from an article on Das Steuerwesen der Schweiz, in the "Zeitschrift für Schweizerische Statistik" for 1883, by Herr C. Muehlemann. The alteration of the tax in Basel-Stadt, and its introduction into canton de Vaud, caused, as may be imagined, a great deal of discussion in those cantons. The "Schweizer Grenzpost," a daily paper published in Basel, and "La "Revue," a daily paper published in Lausanne, and the "Gazette "de Lausanne," discussed the principle of the measure; the "Grenzpost" and the "Revue" supporting, the "Gazette" objecting to the proposed impost. The taxation in cantons Basel and de Vaud also formed the subject of an interesting paper read before the Statistical and Social Inquiry Society of Ireland by Mr. Murrough O'Brien, 18th January, 1887. From all these published statements I have derived much information. I am also indebted to M. Milliet, the chief of the Statistical Department in Switzerland, and to Dr. Paul Speiser, of the Finance Department, canton Basel-Stadt, for many important details, supplying the basis on which this paper is founded. At the time when Herr Muehlemann wrote, eleven cantons out of the twenty-five which form the confederation had adopted progressive taxation. The number of the cantons is twenty-two, but to these the three subdivisions of canton Basel, Appenzell, and Unterwalden have to be added. These subdivisions are sovereign States for internal fiscal purposes exactly as the undivided cantons are. Hence there are, for fiscal purposes, twenty-five sovereign States in Switzerland. At the present time fifteen cantons adopt progressive taxation. Some tax both property and income on this basis, a few income only, one, Geneva, property alone. Of the remaining cantons five in 1881 had no direct taxation at all. At the present time it appears that five cantons which adopt direct taxation do not levy it on a progressive system.

The instances of progressive taxation which I propose to consider particularly are Basel-Stadt, de Vaud, and Uri.

Basel-Stadt has levied its direct taxation on a progressive system since the year 1840. The present arrangement dates from March, 1887, in that canton. In canton de Vaud the present law dates from December, 1886, and in canton Uri from May, 1886. All these arrangements therefore are quite recent in their present forms. So far as I can learn, the intention in Basel-Stadt and de Vaud is not to diminish the amount raised by indirect taxation, on account of the larger amount expected to be raised through the addition to direct taxation. A larger revenue is required, and the method of obtaining this by additions to the original basis was found in practice to be inconvenient. I am not equally certain as to the course likely to be adopted in Uri, but I believe that there also the intention is to employ the fresh taxes as a supplement to, not as a substitute for, any part of the existing levies, and that in the last named canton, as in the others, the main motive was the desire to raise a larger revenue. The work of government administration in these cantons becomes more costly, hence the need of resorting to fresh taxes.

III.—*Canton Basel-Stadt.*

I will now proceed to give an outline of the system in force at the present time in canton Basel-Stadt, comparing it where necessary with the system established by the law of 1880; for as the present law only came into force in May, 1887, its working cannot yet be shown by experience.

Canton Basel-Stadt may fairly claim our attention first, as progressive taxation has been established in it for about half a century.

Basel-Stadt is a portion of the original canton Basel, and was separated from it shortly after the revolution of 1833, the other portion being known as Basel-Land. Basel-Stadt is the smallest of the separate States of Switzerland. Its surface is only 35·8 square kilometres, equal to 22·245 square miles. At the census of 1880 its whole population numbered 65,101 persons, and as of these only 2,816 were returned as concerned with production connected with the soil, including those engaged in dairying and gardening, it may be said to be practically a town population altogether. The cantonal taxes are stated in the "Journal de Statistique Suisse" as being 121,200*l.* in 1881, or about at the rate of 1*l.* 17*s.* 6*d.* for each of the inhabitants. This does not include federal taxation.

The original law establishing progressive taxation dates from some fifty years since; it was revised in 1880, and again in May, 1887. The revision on all these occasions, as well as the introduction of the law itself, was caused by the same motive, the difficulty of raising the sums required for local administration in any other way. As the existing law has been so recently introduced that its results cannot be shown, it is advisable to quote the particulars of the working of the previous law, that of 1880; giving at the same time the heads of the existing law.

The principal sections of the law of 1887 for canton Basel-Stadt are as follows:—

SECTION 3.

The income tax is to be calculated as follows:—

1. The following pay a fixed tax of 8 frs. (say 6*s.* 8*d.*):

(*a.*) Unmarried persons with an income from over 40*l.* up to 60*l.*

(*b.*) Married persons who carry on their own households, and widowers who keep house with their young children, with an income from over 60*l.* to 72*l.*

(*c.*) Widows who keep house with their young children, with incomes from over 72*l.* to 96*l.*

2. A fixed tax of 15 frs. (say 12*s.* 6*d.*) is to be paid by—

(*a.*) Unmarried persons with an income from over 60*l.* to 72*l.*

(*b.*) Married persons who carry on their own households, and widowers who keep house with their young children, with an income from over 72*l.* to 96*l.*

3. Those who are subject to the tax and do not fall into the classes included under heads 1 and 2 have to pay according to the following instructions:—

On incomes up to 160*l.*, 1 per cent.

On the amount up to 160*l.* further (collective income up to 320*l.*), 2 per cent.

On the additional amount up to 160*l.* further (collective income up to 480*l.*), 3 per cent.

On the amount further (collective income beyond 480*l.*), 4 per cent.

SECTION X.—*Property Tax.*

Those who are subject to the tax will be divided according to the principles stated above into the following classes:—

TABLE IV.—*Canton Basel-Stadt. Division of Property into Classes.*

Class.	Property.		Class.	Property.	
	£	£		£	£
1	200	to 320	20	Over 11,000	to 12,000
2	Over 320	,, 480	21	,, 12,000	,, 13,000
3	,, 480	,, 800	22	,, 13,000	,, 14,000
4	,, 800	,, 1,200	23	,, 14,000	,, 15,000
5	,, 1,200	,, 1,600	24	,, 15,000	,, 16,000
6	,, 1,600	,, 2,000	25	,, 16,000	,, 18,000
7	,, 2,000	,, 2,400	26	,, 18,000	,, 20,000
8	,, 2,400	,, 2,800	27	,, 20,000	,, 22,000
9	,, 2,800	,, 3,200	28	,, 22,000	,, 24,000
10	,, 3,200	,, 3,600	29	,, 24,000	,, 26,000
11	,, 3,600	,, 4,000	30	,, 26,000	,, 28,000
12	,, 4,000	,, 4,800	31	,, 28,000	,, 30,000
13	,, 4,800	,, 5,600	32	,, 30,000	,, 32,000
14	,, 5,600	,, 6,400	33	,, 32,000	,, 34,000
15	,, 6,400	,, 7,200	34	,, 34,000	,, 36,000
16	,, 7,200	,, 8,000	35	,, 36,000	,, 38,000
17	,, 8,000	,, 9,000	36	,, 38,000	,, 40,000
18	,, 9,000	,, 10,000	37	,, 40,000	,, 44,000
19	,, 10,000	,, 11,000			

The increase from the 37th class to the 46th class is at the rate of 4,000*l.*; from the 47th class upwards, 80,000*l.* to 84,000*l.*, the increase is at the rate of 8,000*l.*

The tax is always to be reckoned at the lower amount of the class in question.

SECTION XI.

The tax, to be levied yearly according to the definition given above, amounts for property:—

Up to 4,000*l.*	1 per 1,000
Over 4,000*l.*—8,000*l.*	1½ ,,
,, 8,000*l.*	2 ,,

SECTION 15.—*Tax on Inheritances.*

The tax on inheritances is levied from all inheritances, bequests, gifts after death, and gifts which are delivered in accordance with the will of the deceased, occurring in the canton.

The property is liable to the tax which belongs to the heirs as a bequest after the death of the deceased, including the amount of life insurance falling in as a result of the death, as well as property acquired by marriage, dowry, and other property which had descended to the heirs already in the lifetime of the deceased, so far as it represents an anticipated portion.

The property which after the death of a husband or wife, the surviving partner of the marriage receives in accordance with the rights of property resulting from the marriage, or the provisions of the marriage settlement, is not subject to the tax on inheritance.

If the heirs are the children or more distant descendants, the household and farming property received as an inheritance is not subject to the tax.

SECTION XVI.

This section deals with the exemptions from the tax, which in no case apply where property exceeds a value of 160*l*.

SECTION XVII.

The tax is calculated at the following rates:—

1. At 1 per cent. for children, grandchildren, and husbands and wives.
2. At 2 per cent. for more distant descendants and ascendants.
3. At 4 per cent. for grandparents and more distant ascendants, and also for sisters.
4. At 6 per cent. for uncles and nephews.
5. At 9 per cent. for children of sisters, great uncles, and great nephews.
6. At 12 per cent. for all further classes of relationship, and for all persons not related in blood to the testator or giver.

SECTION XXVI.—*Communal Tax.*

Those liable to the tax will be divided by the commissioners of the taxes into the following classes, according to their average total incomes:—

TABLE V.—*Canton Basel-Stadt. Division of Incomes into Classes.*

Class.	Income.				Payment.		
		£		£	£	*s.*	*d.*
1	From	32	to	48	–	5	–
2	Over	48	„	60	–	6	8
3	„	60	„	88	–	10	–
4	„	88	„	120	–	16	8
5	„	120	„	160	1	2	6
6	„	160	„	240	1	13	4
7	„	240	„	400	2	15	10
8	„	400	„	600	4	16	8
9	„	600	„	800	6	16	8
10	„	800	„	1,200	11	6	8
11	„	1,200	„	1,600	16	–	–
12	„	1,600	„	2,400	24	–	–
13	„	2,400	„	4,000	40	–	–
14	„	4,000	„	6,000	64	–	–
15	„	6,000	„	8,000	96	–	–
16	„	8,000			120	–	–

The principal heads of receipt were in the year 1884, the latest statement to hand, as follows:—

TABLE VI.—*Canton Basel-Stadt. Taxation in* 1884.

	£
Tax on incomes and earnings (Einkommens und Erwerbsteuer)..	38,892
,, property (Vermögensteuer)	33,685
Tax for local purposes (Städtische Gemeindesteuer)	19,945
	92,522

(converting the franc as 25 = 1*l.*

The official publications "Finanzdepartement Administrative "Verfügungen" show the number of the persons who paid the tax on income and earnings, and the amount received from each class. It will be observed that by the law of 1880 the first two classes paid fixed amounts, 5 frs. and 10 frs. respectively. There were various regulations showing consideration to widows and others of helpless condition in these two classes. Broadly speaking the taxed incomes are mentioned in Col. 4 of the following table:—

TABLE VII.—*Canton Basel-Stadt. Apportionment and Classes Charged with Tax on Income and Earnings*, 1884.

1 Percentage of Taxpayers.	2 Number of Taxpayers.	3 Class and Rate of Tax.	4 Limit of Income not exceeding	5 Percentage of Amount.	6 Amount Paid by each Class.
			£		£
28·20	2,237	I at 5 frs., say 4*s.* 2*d.* each	60	1·15	447
17·40	1,380	II ,, 10 frs., say 8*s.* 4*d.* each	72	1·42	552
32·62	2,587	III ,, 1 per cent.	160	6·76	2,631
11·60	920	IV ,, 1 and 2 per cent.	320	6·89	2,678
3·44	273	V ,, 1—3 per cent.	480	4·93	1,916
6·74	535	VI ,, 1—4 per cent.	Beyond 480	78·85	30,668
100	7,932		—	100	38,892

By comparing Col. 1 with Col. 5 it will be seen that 6·74 per cent. of the whole number paid under the law of 1880 78·85 per cent. of the amount. The alterations made by the law of 1887 are in the direction of reducing the tax on the poorer classes, and raising the tax on the more wealthy; a slight diminution, 680*l.* a year, on the produce of the income tax was expected. The following statement, taken from the proposal on which the change in the law was based, shows the amount expected.

It should be explained that the amount taken in each case is on the matriculated basis. A system of additional charges to these amounts has hitherto been employed which is not found to work satisfactorily. The new method is expected to produce a sufficient revenue without having recourse to these additions.

Google

TABLE VIII.—*Canton Basel-Stadt. Present and Future Incidence of Taxation, according to the Law of* 1887.

	Estimate in Future.	Present.	More Expected in Future.
	£	£	£
Amount of Property Tax—			
In future, estimate	30,920	—	—
At present	—	18,680	12,240
Amount of Communal Tax—			
In future, estimate	19,620	—	—
At present	—	14,200	5,420
Amount of Tax on Inheritance—			
In direct line	6,000	—	6,000
	56,540	32,880	23,660
Deduct, expected	—	—	680
Diminution in income tax	—	—	—
Estimated net increase	—	—	22,980

The amount of taxable capital in the canton for the years 1883, 1884, and 1885 was as follows:—

TABLE IX.—*Canton Basel-Stadt. Amount of Taxable Capital (Steuer Kapital).*

Year.	Amount.
	£
1883	18,797,240
'84	18,866,168
'85	18,731,072

The amount in the year 1885 is thus smaller than in the two previous years. The diminution is accounted for partly by removals, by migration of occupations, and by appeals against assessments shown to be too high; 1883 was the year for revising the statement. The assessment for the—

	£
Town district was	18,664,360
Country "	132,880
	18,797,240

The following statement compares the incidence of the tax on capital for the years 1875, 1879, and 1883 in the town district:—

TABLE X.—*Canton Basel-Stadt, Town District* (*Stadt Bezirk*). *Comparison of Incidence of Property Tax in* 1875, 1879, *and* 1883.

1 Percentage of Number of Taxpayers, Col. 2.	2 Number of Taxpayers.	3 Division of Property.	4 Taxable Capital.	5 Percentage of Taxable Capital, Col. 4.
		1875.		
		£ £	£	
80·85	2,952	120 to 4,000	2,364,040	15·34
13·86	506	4,000 „ 20,000	4,040,480	26·20
3·04	111	20,000 „ 40,000	2,744,000	17·80
2·25	82	40,000 and above	6,270,000	40·66
100	3,651		15,418,520	100
		1879.		
82·60	3,398	120 to 4,000	2,621,160	15·80
12·25	504	4,000 „ 20,000	3,920,000	23·63
3·08	127	20,000 „ 40,000	3,280,000	19·77
2·07	85	40,000 and above	6,770,000	40·80
100	4,114		16,591,160	100
		1883.		
80·96	3,437	200 to 4,000	3,017,360	16·16
13·98	593	4,000 „ 20,000	4,591,000	24·59
2·80	119	20,000 „ 40,000	3,136,000	16·80
2·26	96	40,000 and above	7,920,000	42·45
100	4,245		18,664,360	100

TABLE XI.—*Canton Basel-Stadt. Alterations in Incidence of Property Tax*, 1875-83.

1 Year.	2 Property.	3 Number of Taxpayers.	4 Capital.
			£
1883	200*l*. to 4,000*l*.	3,437	3,017,360
'75....................	120*l*. „ 4,000*l*.	2,952	2,364,040
	Increase	485	653,320
1883....................	4,000*l*. to 20,000*l*.	593	4,591,000
'75....................	„	506	4,040,480
	Increase	87	550,520
1883....	20,000*l*. to 40,000*l*.	119	3,136,000
'75..................	„	111	2,744,000
	Increase	8	392,000
1883.....................	40,000*l*. and above	96	7,920,000
'75.....................	„	82	6,270,000
	Increase	14	1,650,000

To these tables, taken from the official publication, I have added the following, which shows the changes between 1875 and 1879, and between 1879 and 1883, and enables a comparison to be made between the position at the three periods:—

TABLE XII.—*Canton Basel-Stadt. Alterations in Incidence of Property Tax,* 1875 *and* 1879.

1 Year.	2 Property.	3 Number of Taxpayers.	4 Capital.
			£
1879	120*l.* to 4,000*l.*	3,398	2,621,160
'75	"	2,952	2,364,040
	Increase	446	257,120
1879	4,000*l.* to 20,000*l.*	504	3,920,000
'75	"	506	4,040,480
	Decrease	2	120,480
1879	20,000*l.* to 40,000*l.*	127	3,280,000
'75	"	111	2,744,000
	Increase	16	536,000
1879	40,000*l.* and above	85	6,770,000
'75	"	82	6,270,000
	Increase	3	500,000

By examining Tables XI and XII it will be seen that between 1879 and 1883 the increase in the number of the taxpayers with property valued up to 4,000*l.* was smaller than between 1875 and 1879, but that the increase in the amount of their collective capital was greater than in the earlier period.

In the next class, between 4,000*l.* and 20,000*l.*, there was a positive decrease between 1875 and 1879, but a considerable increase both in number and amount between 1879 and 1883. In the next class, between 20,000*l.* and 40,000*l.*, the increase both in number and amount was considerably less between 1875 and 1883 than between 1875 and 1879.

In the last class, of 40,000*l.* and above, there was a considerably larger increase in numbers between 1879 and 1883 than between 1875 and 1879, but there was a larger increase in amount at the later date. In round figures the property of the wealthy class, as those who are possessed of 40,000*l.* and above may be reckoned, works out as follows at each of the three periods under consideration:—

TABLE XIII.—*Basel-Stadt. Properties above* 40,000*l.*, 1875, 1879, *and* 1883.

Year.	Number.	Average Amount.
		£
1875	82	76,000
'79	85	79,500
'83	96	82,000

The details for 1884 and 1885 would be valuable for comparison, as these would show whether the diminution in the taxable income of the inhabitants had been equally distributed or not among the different classes of the taxpayers.

But the new law passed in 1887 will greatly alter the incidence of taxation. The following table, taken from the "Schweizer "Grenzpost," which, as mentioned previously, devoted, under the editorship of Dr. Brustlein, a great deal of attention to the subject, shows approximately what the effect of the new system will be:—

TABLE XIV.—*Canton Basel-Stadt. Total Taxation Proposed by Law of* 1887, *on Incomes derived from Property and Earnings.*

1 Income from Property.	2 Amount of Taxation.			3 Yearly Earnings.	4 Amount of Taxation.		
£	£	*s.*	*d.*	£	£	*s.*	*d.*
40	1	2	6	40	–	6	8
80	2	14	2	80	1	1	8
120	4	16	8	120	2	–	–
160	7	4	2	160	3	4	2
240	12	6	8	240	5	19	2
320	17	10	10	320	7	10	10
400	26	–	–	400	12	–	–
480	32	8	4	480	14	8	4
560	39	12	6	560	17	12	6
640	49	4	2	640	23	4	2
720	56	8	4	720	26	8	4
800	66	–	–	800	32	–	–
960	80	8	4	960	38	8	4
1,120	94	16	8	1,120	44	16	8
1,280	115	12	6	1,280	57	12	6
1,440	130	–	–	1,440	64	–	–
1,600	152	8	4	1,600	78	8	4
2,400	250	–	–	2,400	136	–	–
4,000	418	–	–	4,000	224	–	–
6,000	636	–	–	6,000	336	–	–
8,000	834	–	–	8,000	440	–	–

Income not derived from property, especially when below 700*l.* or 800*l.* a year, is taxed, as will be seen from this table, which includes the taxation both for central and communal purposes, at the existing rate of charge, less than half as much as income derived from property.

The following are the rates, in some cases approximative, for incomes derived from property:—

TABLE XV.—*Canton Basel-Stadt. Incomes from Property.*

Per Annum. £	Rate per Cent.
40	2·8
80	3·3
120	4
240	5
320	5·5
400	6·5
480	6·75
560	7
640	7·5
720	7·75
800	8
1,200	9
1,600	9·5
Over 2,400	10

From this point upward the rate is nearly constant.

The effect of the new system will apparently be that about 1,800 persons, rather a smaller number in fact, out of a population of more than 60,000 in the canton, will pay more than 90 per cent. of the taxation; about 500 of the 1,800 will pay about 80 per cent. That is to say, if the 60,000 persons form 10,000 families, the heads of 500 of these families, one-twentieth of the whole number, will pay four-fifths of the taxes. A very large part will probably be paid by some 15 or 20 persons.

IV.—*Canton de Vaud.*

We will now turn to the taxation in canton de Vaud. As the taxation in canton de Vaud has hitherto been proportional and not progressive, and the existing system only came into force in 1886, the materials do not exist for showing the details of the working as distinctly as in the case of canton Basel-Stadt, I can only give the general result.

The system differs in some points from that which we have just been considering, apparently from a desire to meet the individual circumstances of each taxpayer as closely as possible.

The population of canton de Vaud was 238,730 at the census of 1880.

The law with respect to direct taxation in the canton imposes a direct tax on personal property, on the produce of labour, and also on real property. This law came into force 11th December, 1886.

SECTION 1.—*General Regulations.*

Art. 1. A direct and distinct tax is imposed by classes :—

(*a.*) On personal property and on the produce of labour, under the title of "personal tax."

(*b.*) On real property, under the title of "property tax."

Art. 2. The taxable fortune of each taxpayer which is rated in the higher classes pays according to the rate charged in the lower classes for the portion corresponding to these last.

Art. 3. The rate of the tax for the lowest class of real property shall always be below that of the corresponding class of personal property.

Art. 4. Every year, when the budget for the following year is presented, this grand council is to fix the rate of the tax to be charged in reference to the present law.

SECTION 2.—*Personal Tax.*

CHAPTER I.

Basis of Taxation, Classes, Rates.

Art. 5. The personal tax is to be charged yearly on the following elements :—

(*a.*) On personal property properly so called.

(*b.*) On income and receipts derived from property.

(*c.*) On the produce of labour.

Art. 6. For collecting this tax the elements on which it is charged are divided each into seven classes, as follows :—

(*a.*) Fortunes, and portions of fortunes consisting of personal property included between :—

TABLE XVI.—*Canton de Vaud. Division of Property into Classes. Law of* 1886-87.

	Amounts.						Class.
	£	*s.*	*d.*		£		
Between	0	0	10	and	1,000	form the	1st class
„	1,000	0	10	„	2,000	„	2nd „
„	2,000	0	10	„	4,000	„	3rd „
„	4,000	0	10	„	8,000	„	4th „
„	8,000	0	10	„	16,000	„	5th „
„	16,000	0	10	„	32,000	„	6th „
„	32,000	0	10	„	above	„	7th „

(*b.*) Incomes and receipts derived from property, or portions of incomes of this description, and the resources obtained by labour, or portions of these resources, included between :—

TABLE XVII.—*Canton de Vaud. Division of Incomes into Classes. Law of* 1886-87.

	Amounts.						Class.	
	£	s.	d.		£			
Between	0	0	10	and	50	form the	1st	class
,,	50	0	10	,,	100	,,	2nd	,,
,,	100	0	10	,,	200	,,	3rd	,,
,,	200	0	10	,,	400	,,	4th	,,
,,	400	0	10	,,	800	,,	5th	,,
,,	800	0	10	,,	1,600	,,	6th	,,
,,	1,600	0	10	,,	above	,,	7th	,,

The separation of the classes of incomes by 10*d.* appears curious to our eyes; this arises from the franc being taken as the unit. Thus in Table XVI the first line reads as between 1 fr. and 25,000 frs.

Art. 7. The rate for the personal tax is fixed according to the proportion:—

TABLE XVIII.—*Canton de Vaud. Rate for Personal Tax according to the Class of the Taxpayer. Law of* 1886-87.

Proportion.		Class.	
1	for the	1st	class
1½	,,	2nd	,,
2	,,	3rd	,,
2½	,,	4th	,,
3	,,	5th	,,
3½	,,	6th	,,
4	,,	7th	,,

Art. 8. The elements of the personal tax are distinct, but they are indissolubly united together by the proportion:—

1 per 1,000 on personal property properly so called.
16 ,, income and receipts derived from property.
8 ,, the results of labour.

CHAPTER IV.

Tax on Income, and Receipts derived from Property.

Art. 13. This tax is based on the amount of the income and annuities, for life or temporary, due annually to the taxpayer, as well as on the annual produce derived from the personal property, or personalty which he enjoys.

Art. 14. The unproductive property and personalty subject to this tax are valued at their selling price, and interest at 4 per cent. on this value is considered as the amount of the produce.

Art. 15. The maintenance and keep which one person receives from others are valued and assimilated to income when they are not received as alms or charity.

Chapter VI.

Exemptions and Deductions from the Tax.

Among the more important of these are :—

Art. 21. There is to be deducted from the valuation of the personal property subject to the tax :—

(*a.*) The products of the soil, rents, produce, and crops of the preceding year remaining in the possession of the owner, beneficiary, farmer, or part farmer.

(*b.*) The value of property in kind, clothes and bedding necessary for the family, cooking utensils, tools and implements if this does not exceed 200*l.*, or that amount if this exceeds them.

Art. 22. There are to be deducted from the gross produce of labour :—

(*a.*) The expenses necessary for carrying on the business or industry, or for the exercise of the profession or vocation.

(*b.*) As family charges, the expenses of maintenance reckoned at 16*l.*, for the head of the family, his wife, and for each of his descendants who are minors, as well as for each of the persons whom the taxpayer supports in execution of the obligations imposed on him by law.

Section 3.—*Property Tax.*

Art. 68. The property tax is annually due on the 1st January, on the value on the official statement (*cadastre*) of all the real property, house property or not, in the Vaudois territory, after deduction of the mortgage debts, the deduction of which is authorised by the law.

Art. 69. In charging this tax the real property of the taxpayers is divided into three classes as follows :—

The real property, or portions of this property between

£		d.		£		
	....	10	and	1,000	form the	1st class
1,000	....	10	„	4,000	„	2nd „
4,000	....	10	„	above	„	3rd „

Art. 70. The rate of the tax on real property is fixed by the annual law according to the proportion :—

1	for the	1st class
1½	„	2nd „
2	„	3rd „

The following tables explain the working of the taxes on property and income. They show the whole system as applied to the various descriptions of property and of income, and in the case of the tax on earnings, the modification of the assessments according to the number of children in the family. This last is one of the most remarkable attempts made in modern times to fit the "burden "to the back" in respect of direct taxation.

TABLE XIX.—*Canton de Vaud. Tax on Real Property (Impôt Foncier) in* 1886, *and the Alteration by the Law of* 1886-87.

1 Net Property of the Taxpayer after Deducting Debts.	2 Tax in 1886 at 1 fr. 40 c. (1*s.* 2*d.*) per 1,000.			3 Tax according to the Plan of the New Law, 1886-87, supposing the Tax to be at 1 fr. (10*d.*) per 1,000 on the First Category.	
£	£	*s.*	*d.*	£	*s.*
400	–	11	3	–	8
800	1	2	4	–	16
1,000	1	8	–	1	–
1,200	1	13	7	1	6
1,600	2	4	10	1	18
2,000	2	16	–	2	10
2,400	3	7	3	3	2
2,800	3	18	5	3	14
3,200	4	9	7	4	6
3,800	5	–	10	4	18
4,000	5	12	–	5	10
6,000	8	8	–	9	10
8,000	11	4	–	13	10
12,000	16	16	–	21	10
16,000	22	8	–	29	10
20,000	28	–	–	37	10
24,000	33	12	–	45	10
28,000	39	4	–	53	10
32,000	44	16	–	61	10
36,000	50	8	–	69	10
40,000	56	–	–	77	10

TABLE XX.—*Canton de Vaud. Tax on Capital* (*Capitaux*) *in* 1886, *and the Alteration by the Law of* 1886-87.

1	2			3		
Property Taxable.	Tax in 1886 at 1 fr. 60 c. (1*s.* 4*d.*) per 1,000.			Tax according to the Plan of the New Law, supposing the Tax to be at 1 fr. 20 c. (1*s.*) per 1,000 on the First Category.		
£	£	*s.*	*d.*	£	*s.*	*d.*
400	–	12	10	–	9	7
800	1	5	8	–	19	3
1,000	1	12	–	1	4	–
1,200	1	18	5	1	11	–
1,600	2	11	4	2	5	3
2,000	3	4	–	3	–	–
2,400	3	17	–	3	19	3
2,800	4	9	10	4	18	6
3,200	5	2	3	5	17	9
3,600	5	15	–	6	16	9
4,000	6	8	–	7	16	–
6,000	9	12	–	13	16	–
8,000	12	16	–	19	16	–
12,000	19	4	–	33	–	–
16,000	25	12	–	47	8	–
20,000	32	–	–	61	16	–
24,000	38	8	–	78	12	–
28,000	44	16	–	95	8	–
32,000	51	4	–	112	4	–
36,000	57	12	–	129	–	–
40,000	64	–	–	145	16	–

TABLE XXI.—*Canton de Vaud. Tax on Pensions and Incomes derived from Property* (*Pensions, Rentes, Usufructs*) *in* 1886, *and the Alteration by the Law of* 1886-87.

1 Amount Taxable.	2 Tax in 1886 on Incomes Capitalised at Twenty Years' Purchase on Amount in Col. 1 (*Rentes Capitalisées*), at 1 fr. 60 c. (1*s.* 4*d.*) per Mille.			3 Tax according to the Plan of the New Law, supposing the Tax to be at 19 frs. 20 c. (15*s.* 2*d.*) per 1,000 on the First Category.		
£	£	*s.*	*d.*	£	*s.*	*d.*
20	–	12	10	–	7	3
40	1	5	8	–	15	2
50	1	12	–	–	19	3
60	1	18	5	1	5	–
80	2	11	4	1	16	6
100	3	4	–	2	8	–
120	3	17	–	3	3	–
140	4	9	10	3	18	10
160	5	2	3	4	14	–
180	5	15	–	5	8	3
200	6	8	–	6	4	6
300	9	12	–	11	–	9
400	12	16	–	15	17	–
600	19	4	–	26	8	–
800	25	12	–	37	18	6
1,000	32	–	–	49	8	3
1,200	38	8	–	62	17	9
1,400	44	16	–	76	6	–
1,600	51	4	–	89	16	–
1,800	57	12	–	103	4	–
2,000	64	–	–	116	12	6

Note to Tables XIX, XX, and XXI. The working of the taxes in these tables is best shown by giving the examples in francs, the rendering in English money being only approximative. Thus in Table XIX, 25,000 frs., 1,000*l.* (line 3 in Col. 1), produces 25 frs.; in Col. 3 30,000 frs., 1,200*l.*, the next amount, is taxed on 25,000 frs. at the rate of 1 fr. per 1,000, *i.e.*, 25·0 frs.
and on 5,000 frs. at 1½ of the same rate 7·50 „
making 32·50 „

A similar method is followed in Table XX, 25,000 frs., 1,000*l.* (line 3, Col. 1), produces 30 frs., in Col. 3, the next amount, 30,000 frs., 1,200*l.*, is taxed on
25,000 frs. at the rate of 1 fr. 20 per 1,000, *i.e.* 30 frs.
and on 5,000 „ „ 1 „ 80 „ „ 9 „
making 39 „

In Table XXI, 1,250 frs., 50*l.* (line 3, Col. 1), produces 24 frs. in Col. 3. The next amount, 1,500 frs., 60*l.*, is taxed on 1,250 frs. at the rate of 19 frs. 20 c. per 1,000 *i.e.*, fr. 24
and on 250 frs., at 1½ of the same rates „ 7·20
Making frs. 31·20

TABLE XXII.—*Canton de Vaud. Taxation on Income* (*Impôt Mobilier, Produit of* 1886-87; *with the Rates on Bachelors and Married Men, and the Deductions*

Amount Taxable.	Tax in 1886 on Produce of Labour, after deducting 800 frs. (say 32*l.*) at 1 fr. 60 c. (1*s.* 4*d.*) per Cent.	Tax according to the Plan of the New Law, supposing			
		Bachelor.	Married Man.	Parent of 1 Child.	Parent of 2 Children.
		Deduction 16*l.*	Deduction 32*l.*	Deduction 48*l.*	Deduction 64*l.*
£	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
20	—	4*l.* – – 9	—	—	—
40	– 2 5	– 4 6	8*l.* – 1 6	—	—
50	– 5 6	– 6 6	– 3 –	2*l.* – – 5	—
60	– 8 6	– 8 8	– 5 –	– 2 –	—
80	– 15 4	– 12 9	– 8 6	– 5 9	16*l.* – 2 9
100	1 1 8	– 19 10	– 15 –	– 9 6	– 6 6
120	1 8 –	1 4 9	1 – 6	– 16 –	– 11 –
140	1 14 4	1 12 9	1 6 9	1 1 6	– 17 –
160	2 – 10	2 – 9	1 14 6	1 8 6	1 2 8
180	2 7 1	2 8 –	2 2 3	1 16 3	1 10 -
200	2 14 –	2 16 –	2 9 6	2 4 –	1 18 –
300	4 6 –	5 2 3	4 14 6	4 7 –	4 – –
400	7 3 –	7 10 3	7 2 6	6 15 8	6 7 –
600	9 1 8	12 14 3	12 5 –	11 16 –	11 7 –
800	12 5 9	18 10 –	18 – 9	17 12 –	17 2 –
1,000	15 10 –	24 4 9	23 16 –	23 6 4	22 17 6
1,200	18 14 –	30 17 9	30 6 9	29 16 –	29 5 3
1,400	21 18 –	37 12 –	37 1 6	36 10 –	36 – –
1,600	25 2 –	44 6 –	43 16 –	43 5 –	42 14 3
1,800	28 5 9	51 – 9	50 10 3	50 – –	49 8 9
2,000	31 10 –	57 16 –	57 4 9	56 14 –	56 3 –

The amounts with a *line* beneath them, as 4*l.* in col. headed Bachelor,

The alteration of taxation in canton de Vaud has naturally been the subject of much criticism. I shall now give some remarks on it derived from two newspapers published in the canton, the "Revue Vaudois," which supported the tax, and the "Gazette de "Lausanne," which opposed it.

The "Revue Vaudois," the paper which supports the tax, describes its working thus:—

The project of law establishes three classes for real property:—

du Travail) derived from Earnings in 1886, *and the Alteration made by the Law made for Family Charges for Children from One to Twelve in Number.*

---

the Tax to be at 9 frs. 60 c. (8s.) per 1,000 on the First Category.

Parent of 3 Children.	Parent of 4 Children.	Parent of 5 Children.	Parent of 6 Children.	Parent of 8 Children.	Parent of 10 Children.	Parent of 12 Children.
Deduction 80*l.*	Deduction 96*l.*	Deduction 112*l.*	Deduction 128*l.*	Deduction 160*l.*	Deduction 192*l.*	Deduction 224*l.*
£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	—	—	—	—	—	—
20*l.* – 3 9	4*l.* – – 9	—	—	—	—	--
– 7 9	– 4 6	8*l.* – 1 6	—	—	—	—
– 12 6	– 7 11	– 5 –	12*l.* – 2 –	—	—	—
– 18 –	– 13 6	– 8 8	– 5 9	—	—	—
1 4 –	– 19 6	– 14 7	– 10 –	20*l.* – 3 7	—	—
1 11 6	1 5 6	1 – 8	– 16 –	– 7 2	8*l.* – 1 6	—
3 12 –	3 4 4	2 17 9	2 11 6	1 19 6	1 6 9	76*l.* – 17 3
6 – –	5 12 4	5 4 6	4 17 –	4 1 6	3 6 –	2 13 –
10 18 –	12 8 7	10 – 6	9 13 –	8 17 6	8 2 –	7 6 9
16 13 –	16 3 6	15 14 6	15 5 3	14 6 9	13 8 6	12 10 –
22 8 –	21 18 10	21 10 –	21 – 6	20 2 –	19 4 –	18 5 –
28 14 –	28 4 3	27 13 5	27 2 7	26 1 2	25 – –	24 – 6
35 9 6	34 18 6	34 7 9	33 17 –	32 16 –	31 14 –	30 12 6
42 3 6	41 13 –	41 2 –	40 7 4	39 10 –	38 8 6	37 7 –
48 18 –	48 7 –	47 17 –	47 7 –	46 4 7	45 2 6	44 1 3
55 12 6	55 1 9	54 11 –	54 – 5	52 18 9	51 17 6	50 16 –

Deduction 16*l.*, show the sum on which the tax is levied in these instances.

£	*d.*		*s.*	*d.*
	 10	to 1,000, paying at the rate of	1	–
1,000	 10	„ 4,000, „	1	2
4,000	 10	and above „	2	–

Thus, taking the tax as 1 °/₀₀ on the first class, the property tax would raise, it is mentioned, 42,939*l.* [apparently 43,343*l.*], divided as follows: —

Note.—Throughout this statement the franc is converted as nearly as may be as 25 = 1*l.* Where fractional parts occur the franc is reckoned as 1 = 10*d.*

TABLE XXIII.—*Canton de Vaud. Taxpayers. Real Property divided into Three Classes.*

				£
42,237	taxpayers in the	1st class,	paying	9,778
6,237	„	2nd	„	14,959
1,163	„	3rd	„	18,606
49,637				43,343

I cannot trace the cause of the discrepancy between 42,939*l.* and 43,343*l.* in these figures, which exist in the statement as published in the paper, but it is sufficiently close to enable us to understand how the tax will work out.

The "Gazette de Lausanne," a paper which opposed the introduction of the tax, gives an instance of the complicated calculations which must ensue. This begins by a reference to the primary article in the law quoted above, which declares that the "Elements "of the Personal Tax are distinct, but they are indissolubly united "together by the proportion :—

1 per 1000 on personal property properly so called
16 „ income and receipts derived from property
8 „ the receipts of labour."

Let us take, the "Gazette de Lausanne" continues, the instance of a taxpayer with a vineyard worth 1,040*l.*, and a capital in personal securities of 1,400*l.*; with an annual income derived from property of 52*l.*, and a fixed salary of 104*l.* He is a widower with neither child nor debt.

This taxpayer will figure :—

In the first class of contributors to the property tax on 1,000*l.*, rate 1;

In the second class of contributors to the property tax on 40*l.*, rate 1½;

In the first class of contributors to the tax on personal property on 1,000*l.*, rate 1·20;

In the second class of contributors to the tax on personal property on 400*l.*, rate 1·80;

In the first class of contibutors to the tax on income derived from property worth 50*l.*, rate 19·20;

In the second class of contributors to the tax on income derived from property worth 20*l.*, rate 28·80;

In the first class of contributors to the tax on the produce of labour worth 50*l.*, rate 9·60;

In the second class of contributors to the tax on the produce of labour worth 50*l.*, rate 14·40;

In the third class of contributors to the tax on the produce of labour worth 4*l.*, rate 19·20;

This taxpayer is thus liable under nine different heads and at nine different rates, and the charge would apparently be:—

	£	s.	d.
On 1,000*l.* at 1 per thousand	1	–	–
40*l.* „ 1½ „	–	1	2
1,000*l.* „ 1·20 „	1	4	–
400*l.* „ 1·80 „	–	14	5
50*l.* „ 19·20 „	–	19	2
20*l.* „ 28·80 „	–	11	6
50*l.* „ 9·60 „	–	9	7
50*l.* „ 14·40 „	–	14	5
4*l.* „ 19·20 „	–	1	5
	5	15	8

Larger incomes would of course be placed under a greater number of divisions.

The statements in neither of these papers enable me to trace the number of taxpayers very closely.

I therefore reproduce here a table taken from a report presented to the legislative assembly of canton de Vaud by a member who proposed to divide real as well as personal property into seven classes, which Mr. Murrough O'Brien printed in his paper:—

TABLE XXIV.—*Canton de Vaud. Number and Value of Personal and Real Estates, divided into Seven Classes.*

Value of the Different Classes.	Personal Estates.		Real Estates.	
	Number.	Value.	Number.	Value.
		£		£
1. Up to 1,000*l.*	23,126	4,600,000	42,237	9,760,000
2. 1,000*l.* to 2,000*l.*	1,603	2,240,000	4,430	6,160,000
3. 2,000*l.* „ 4,000*l.*	876	2,400,000	2,107	5,720,000
4. 4,000*l.* „ 8,000*l.*	456	2,560,000	758	4,120,000
5. 8,000*l.* „ 16,000*l.*	216	2,360,000	336	3,960,000
6. 16,000*l.* „ 32,000*l.*	82	1,760,000	70	2,240,000
7. Over 32,000*l.*	42	2,120,000	4	440,000
Total	26,401	18,040,000	49,937	32,400,000

By comparing Table XXIV with Table XXIII, in which these taxpayers are divided between the three classes into which the law actually separates them, we may trace in some degree the incidence of the tax.

One thousand one hundred and sixty-three persons, about 2 per cent. of the whole number of taxpayers, and less than 1 in 200 of the whole population will pay more than two-fifths of the entire taxation; and a very considerable part of this latter amount will fall on about 120 persons, less than 1 in 210 of the whole number of taxpayers, and about one in 2,000 of the whole population.

I shall now proceed to the system in force in canton Uri, a canton the economic position of which is very different from that of the two cantons which we have previously been considering.

V.—*Canton Uri.*

The population in canton Uri was 23,694 at the census of 1880.

The law regulating the taxation in the canton, which dates from 1886, states in the preamble that it is proposed to obtain an increase of revenue for the country through a proportional obligation to meet the burden of taxation. The summary which follows is taken from Articles 1, 2, 10, 11, 17, and 18.

The three principal sources from which the obligations of the State are to be met are a tax on property, on profit, and a poll tax (durch Erhebung einer Vermögens-Erwerbs-und Kopfsteur).

The poll tax is in its simple basis 5*d.* (50 centimes) per head on the male population of the age of 20 years.

The property tax is levied, generally speaking, on all property of the value of 80*l.* and over in the canton, with the exception of charitable institutions and domestic furniture, and tools, clothes, and books.

The simple tax is at the rate of 5*d.* per 40*l.*, (50 Rappen vom Tausend, 1,000 frs.). Property of 1,200*l.* (30,000 frs.) and upwards is subject to additional payments. The scale is as follows:—

TABLE XXV.—*Canton Uri. Property Tax.*

Property.	Rates of Tax 1,000 frs. (40*l.*).	
	s.	*d.*
Up to and including 1,160*l.*	–	5
Then from 1,200*l.* to 2,000*l.*	–	6
2,000*l.* 10*d.* „ 3,200*l.*	–	7
3,200*l.* 10*d.* „ 4,000*l.*	–	8
4,000*l.* 10*d.* „ 6,000*l.*	–	9
6,000*l.* 10*d.* „ 8,000*l.*	–	10
8,000*l.* 10*d.* „ 10,000*l.*	–	11
10,000*l.* 10*d.* „ 12,000*l.*	1	–
12,000*l.* 10*d.* „ 14,000*l.*	1	1
14,000*l.* 10*d.* „ 16,000*l.*	1	2
16,000*l.* 10*d.* and over	1	3

Tax on Profits. Income Tax.

The tax on profits is levied generally on every business and professional income made in the canton.

In estimating this the expense incurred in gaining the income, not including in this however the expenses of maintenance (Haushaltungs Kosten), and 4½ per cent. on the capital employed, are exempt from the tax, as are also the wages of domestic servants and workpeople not exceeding 12*l.* a-year, and every income up to and including 28*l.* a-year. The scale is as follows:—

TABLE XXVI.—*Canton Uri. Tax on Profits. Income Tax.*

Income.			Rates of Tax 100frs. (4*l.*).	
			s.	*d.*
Up to and including 40*l.*			–	2½
Then from 40*l.*	10*d.*	to 80*l.*	–	3½
80*l.*	10*d.*	„ 120*l.*	–	4½
120*l.*	10*d.*	„ 160*l.*	–	6
160*l.*	10*d.*	„ 200*l.*	–	8
200*l.*	10*d.*	„ 240*l.*	–	10
240*l.*	10*d.*	„ 280*l.*	1	–
280*l.*	10*d.*	„ 320*l.*	1	2
320*l.*	10*d.*	„ 360*l.*	1	4
360*l.*	10*d.*	„ 400*l.*	1	6
400*l.*	10*d.*	and over	1	8

The tax at the rates given above is to be charged on the whole property or income. The proportion per cent. of the tax to the income is shown in Table XXVII:—

TABLE XXVII.—*Canton Uri. Division of Income Tax into Classes, Rate of Income Tax, and Proportion per Cent. of Amount of Income Tax to Incomes.*

Amount of Income.	Rate of Income Tax for every 4*l.*		Amount of Income Tax.			Net Income.			Approximate Proportion of Amount of Income Tax to Income.
£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	Per cnt.
40	–	2½	–	2	1	39	17	11	0·2
80	–	3½	–	5	10	79	14	2	0·3
120	–	4½	–	11	3	119	8	9	0·5
160	–	6	1	–	–	159	–	–	0·6
200	–	8	1	13	4	198	6	8	0·8
240	–	10	2	10	–	237	10	–	1·0
280	1	–	3	10	–	276	10	–	1·2
320	1	2	4	13	4	315	6	8	1·4
360	1	4	6	–	–	354	–	–	1·7
400	1	6	7	10	–	392	10	–	1·9
440	1	8	9	3	4	430	16	8	2·0

The system of progression does not apply to the local and communal taxes.

It will be observed that at both extremities of the scale the tax is proportional and not progressive, and that the scale is much less severe than in canton Basel-Stadt; and that at the highest point the tax corresponds with our income tax when charged at 5*d.* in the £, the original levy.

The first point which will strike any one who has examined these regulations is the extraordinary differences in the amount and in the system of taxation in the three different cantons. These are so great that it is hardly possible to construct a statement showing exactly the incidence of taxation on any particular income, 400*l.* a year for instance, in all three cantons. Nor again would such a statement, if it were prepared, show exactly what the real burden of taxation was in each case, as the State assists the taxpayers in many ways, such as providing free or greatly assisted education for the children of the taxpayer, and in many other ways.

VI.—*Progressive Taxation in England.*

The graduation of the income tax, which is one form of progressive taxation, was referred to in the able paper on the taxes on property and income by Mr. T. H. Elliott, read before this Society 15th March, 1887; Mr. Elliott has kindly supplied me with the following statement on the subject, which, as it has been prepared in the Department of Inland Revenue, may be regarded as authoritative. The memorandum besides mentioning the graduation in the income and property tax, refers to two branches of taxation, the probate duties and the house duty, which are not mentioned in Mr. Elliott's paper, and thus carries our information on the subject a good deal further:—

"The principle of taxation according to a graduated scale is no "new feature in the fiscal history of this country, although hitherto "its application has been confined within very narrow limits.

"Thus when the income tax was imposed by Mr. Pitt in 1799, "there were various rates of tax for incomes between 60*l.* and "200*l.*, and it was when the income reached the latter amount that "the full rate of 10 per cent. became chargeable.

"In 1803 when the tax was reimposed by Mr. Addington, a "similar principle was adopted, rates varying from 3*d.* to 11*d.* in "the £ being levied on incomes from 60*l.* to 150*l.*, and a rate of "1*s.* being charged on incomes of 150*l.* and upwards.

"In 1806, when important changes in the character of the tax "were introduced by Lord Henry Petty, these rates were modified, "but the principle was retained of charging varying and increasing "rates on small incomes ranging from 50*l.* to 150*l.*

"In 1842 Sir Robert Peel abandoned anything of the nature of "graduated taxation, an equal rate in the £ being charged on all "incomes above 150*l.* But in 1853 Mr. Gladstone again drew a "distinction between incomes above and below 150*l.*, charging the "latter 5*d.*, and the former 7*d.* in the £, with total exemption in "cases where the income did not amount to 100*l.*

"This double rate continued to be imposed in each year from

" 1853-62, but in 1863 Mr. Gladstone introduced a new method of charging incomes above and below a certain amount at unequal rates, by allowing abatement or allowance of a fixed sum before calculating the tax. Successive chancellors have altered the amount of the abatement and of the incomes from which it is allowed, but the principle introduced by Mr. Gladstone in 1863 remains intact.

"The allowance of the abatement is equivalent to the acceptance of the following graduated rates, when the full rate of duty is 8*d.*:—

Income. £	Rate. *d.*
150	1·6
200	3·2
250	4·1
300	4·8
350	5·2
400	8·0

"The probate duties afford another instance of a graduated scale. Prior to 1880, however, the graduation was of a very irregular character, the rate steadily increasing from 1 per cent. in the case of an estate of 100*l.* to 2·2 per cent. on an estate of 1,000*l.*, then decreasing to 1½ per cent. on an estate of 4,000*l.*, with many similar fluctuations, but never approaching the rate of small estates.

"In 1880 Sir Stafford Northcote revised the scale so as to afford relief to the smaller estates and increase the duty paid by the larger ones, but in the following year Mr. Gladstone introduced what is practically the following scale:—

	Per Cent.
Estates from 100*l.* to 500*l.*	2
„ 500*l.* „ 1,000*l.*	2½
„ 1,000*l.* and upwards	3

"The earlier history of the house duty affords a similar example of graduated taxation within narrow limits. When the duty was imposed by Lord North in 1778, the following scale was adopted:—

	s.	*d.*	
Houses worth 5*l.* and under 50*l.*	–	6	in the £
„ 50*l.* or more	1	–	„

"In the following year the scale was revised as follows:—

	s.	*d.*	
Houses worth 5*l.* and under 20*l.*	–	6	in the £
„ 20*l.* „ 40*l.*	–	9	„
„ 40*l.* and upwards	1	–	„

"This scale was again modified in 1798, 1802, 1803, 1806, and "finally in 1808, when the duty was thus fixed:—

	s.	*d.*	
Houses worth 5*l.* and under 20*l.*	1	6	in the £
" 20*l.* " 40*l.*	2	3	"
" 40*l.* and upwards	2	10	"

"At these rates the duty remained with some modifications "until 1834, when it was repealed by Lord Althorp, but it is "interesting to bear in mind that for a period of fifty-six years "the principle of a graduated house tax was maintained by eleven "successive chancellors of the exchequer."

I need hardly do more than refer to the complete failure of the "triple assessment" as imposed by William Pitt in 1798. That form of tax has been described by Mr. Stephen Dowell, in the following words:—

"The taxpayers of the presumably richer class were charged, "by reference to the assessments made on them for the taxes of "the previous year, as follows:—

	Number of Times.
Under 25*l.*, a triple assessment	3
25*l.* and under 30*l.*	3½
30*l.* " 40*l.*	4
40*l.* " 50*l.*	4½
50*l.* and upwards	5

"So that although the tax was termed a 'triple assessment,' "the charge ranged up to a quintuple assessment for any one "charged 50*l.* or more in his assessment for the previous year."— "History of Taxation and Taxes in England," Stephen Dowell, vol. iii, p. 175.

The plan proved a failure. According to Pitt's calculations the yield of the triple assessment should have been about 10 millions; the actual produce was only about half that amount.

Mr. F. B. Garnett, C.B., has kindly supplied me with the following memorandum on the income tax, which his thorough acquaintance with the subject renders of especial value, and which supplies a complete historical statement of the working of the tax since it was first imposed in this country. It will be seen by this that William Pitt allowed abatements according to the number of children in the family.

Memorandum on the Income Tax.

It was in the year 1798 that a tax was first imposed with reference to income (by the Act of 38 George III, cap. 16), under which rates were fixed according to the amount which a person paid for assessed taxes. By the 1st section of 38 Geo. III, cap. 16, it was provided that persons assessed to the duties on male servants, carriages, and horses, should pay additional duties according to certain graduated scales, *e.g.*—

If assessed to these duties an amount—

Under 25*l.*	to pay under this Act	3 times the amount
30*l.* and under 40*l.*		4 ,,
50*l.* and upwards		5 ,,

By the 2nd section graduated duties were also fixed to be paid by persons assessed to houses, windows, dogs, clocks, or watches, &c.—

If 7*l.* 10*s.* and under 10*l.*	to pay under this Act	the same amount or 1 rate
,, 10*l.* and under 12*l.* 10*s.*		twice the amount or 2 rates
,, 15*l.* ,, 20*l.*		3 rates
,, 30*l.* ,, 40*l.*		4 ,,
,, 50*l.* and upwards		5 ,,

By the 3rd section it was provided that persons assessed to the duties on lodging houses and shops should pay additional duties graduated in a similar manner, commencing at 3*l.* and rising to 30*l.*

Persons whose total income was under 60*l.* were exempted from the tax.

When the income amounted to 60*l.* or more, abatement was allowed, so as to reduce the duty to certain proportions of the income, varying from $\frac{1}{120}$th to $\frac{1}{10}$th part.

Also persons having more than 4 children maintained by them, were entitled to an abatement. In 1799 this Act being found inoperative, from its being a tax upon expenditure and not upon income, and from its not being paid by persons who were not chargeable to the assessed taxes, was repealed by the Act of 39 George III, cap. 13, which granted duties upon income in lieu of the farm duties. All incomes of 60*l.* a year and upwards were taxed upon the same graduated scale as in the Act of 38 George III, and abatements were allowed to persons having families. The scale was as follows, viz., incomes of—

£		£				£		£			
60	to	65	to pay	$\frac{1}{120}$th	part.	135	and under	140	to pay	$\frac{1}{26}$th	part.
65	and under	70	,,	$\frac{1}{95}$th	,,	140	,,	145	,,	$\frac{1}{24}$th	,,
70	,,	75	,,	$\frac{1}{70}$th	,,	145	,,	150	,,	$\frac{1}{22}$nd	,,
75	,,	80	,,	$\frac{1}{65}$th	,,	150	,,	155	,,	$\frac{1}{20}$th	,,
80	,,	85	,,	$\frac{1}{60}$th	,,	155	,,	160	,,	$\frac{1}{19}$th	,,
85	,,	90	,,	$\frac{1}{55}$th	,,	160	,,	165	,,	$\frac{1}{18}$th	,,
90	,,	95	,,	$\frac{1}{50}$th	,,	165	,,	170	,,	$\frac{1}{17}$th	,,
95	,,	100	,,	$\frac{1}{45}$th	,,	170	,,	175	,,	$\frac{1}{16}$th	,,
100	,,	105	,,	$\frac{1}{40}$th	,,	175	,,	180	,,	$\frac{1}{15}$th	,,
105	,,	110	,,	$\frac{1}{38}$th	,,	180	,,	185	,,	$\frac{1}{14}$th	,,
110	,,	115	,,	$\frac{1}{36}$th	,,	185	,,	190	,,	$\frac{1}{13}$th	,,
115	,,	120	,,	$\frac{1}{34}$th	,,	190	,,	195	,,	$\frac{1}{12}$th	,,
120	,,	125	,,	$\frac{1}{32}$nd	,,	195	,,	200	,,	$\frac{1}{11}$th	,,
125	,,	130	,,	$\frac{1}{30}$th	,,	200	or upwards		,,	$\frac{1}{10}$th	,,
130	,,	135	,,	$\frac{1}{28}$th	,,						

Table of Rate according to Income.

Annual Income. £		£	s.	d.	Annual Income. £		£	s.	d.	Annual Income. £		£	s.	d.
60	120th part....	–	10	–	110	36th part....	3	1	1¼	160	18th part....	8	17	9¼
61		–	10	2	111		3	1	8	161		8	18	10½
62		–	10	4	112		3	2	2½	162		9	–	–
63		–	10	6	113		3	2	9¼	163		9	1	1¼
64		–	10	8	114		3	3	4	164		9	2	2½
65	95th part....	–	13	8	115	34th part....	3	7	7¾	165	17th part....	9	14	1¼
66		–	13	10½	116		3	8	2¾	166		9	15	3½
67		–	14	1¼	117		3	8	9¾	167		9	16	5½
68		–	14	3¾	118		3	9	4¾	168		9	17	7¾
69		–	14	6¼	119		3	10	–	169		9	18	9¾
70	70th part....	1	–	–	120	32nd part....	3	15	–	170	16th part....	10	12	6
71		1	–	3¼	121		3	15	7½	171		10	13	9
72		1	–	6¾	122		3	16	3	172		10	15	–
73		1	–	10¼	123		3	16	10½	173		10	16	3
74		1	1	1½	124		3	17	6	174		10	17	6
75	65th part...	1	3	–¾	125	30th part....	4	3	4	175	15th part....	11	13	4
76		1	3	4½	126		4	4	–	176		11	14	8
77		1	3	8¼	127		4	4	8	177		11	16	–
78		1	4	–	128		4	5	4	178		11	17	4
79		1	4	3½	129		4	6	–	179		11	18	8
80	60th part....	1	6	8	130	28th part....	4	12	10¾	180	14th part....	12	17	1½
81		1	7	–	131		4	13	6¾	181		12	18	6¾
82		1	7	4	132		4	14	3¼	182		13	–	–
83		1	7	8	133		4	15	–	183		13	1	5
84		1	8	–	134		4	15	8½	184		13	2	10¼
85	55th part....	1	10	10¾	135	26th part....	5	3	10	185	13th part....	14	4	7¼
86		1	11	3¼	136		5	4	7¼	186		14	6	1¾
87		1	11	7½	137		5	5	4½	187		14	7	8¼
88		1	12	–	138		5	6	1¾	188		14	9	2¾
89		1	12	4¼	139		5	6	11	189		14	10	9
90	50th part....	1	16	–	140	24th part....	5	16	8	190	12th part....	15	16	8
91		1	16	4¾	141		5	17	6	191		15	18	4
92		1	16	9½	142		5	18	4	192		16	–	–
93		1	17	2¼	143		5	9	2	193		16	1	8
94		1	17	7	144		6	–	–	194		16	3	4
95	45th part....	2	2	2½	145	22nd part....	6	11	9¾	195	11th part....	17	14	6½
96		2	2	8	146		6	12	8½	196		17	16	4¼
97		2	3	1¼	147		6	13	7½	197		17	18	2
98		2	3	6½	148		6	14	6½	198		18	–	–
99		2	4	–	149		6	15	5¼	199		18	1	9¾
100	40th part....	2	10	–	150	20th part....	7	10	–					
101		2	10	6	151		7	11	–					
102		2	11	–	152		7	12	–					
103		2	11	6	153		7	13	–					
104		2	12	–	154		7	14	–					
105	38th part....	2	15	3	155	19th part....	8	3	1					
106		2	15	9¼	156		8	4	2½					
107		2	16	3¾	157		8	5	3					
108		2	18	10	158		8	6	3¼					
109		2	17	4¼	159		8	7	4¼					

And for any income amounting to 200*l.* and upwards, one-tenth part of the same.

Persons having children, maintained principally at their expense, were allowed the following abatements, viz.:—

£		£	
60	and under	400,	5 per cent. for each child.
400	„	1,000,	4 „ „ when there is any above six years old, and 3 per cent. when all under six.
1,000	„	5,000,	3 per cent. and 2 per cent. in like manner.
5,000	and upwards		2 „ 1 „ „

By various subsequent Acts the regulations as to returns and assessments were modified, but the incidence of the duties was not altered until in 1803, by the Act of 43 George III, cap. 122, the principle was introduced of charging realized property at its first source, except as regards dividends of the public funds, which were still required to be returned for assessment as heretofore. A graduated scale of 3*d.* to 11*d.* in the £ was imposed on incomes varying from 60*l.* to 150*l.*, and 5 per cent. on 150*l.* and upwards, but incomes under 60*l.* were still exempted.

Farmers were to pay 9*d.* in the £ in England on three-fourths of the annual value, and in Scotland on half.

There were still allowances for children, viz., for incomes of—

£		£		
60	and under	400	for each child above two,	4 per cent.
400	„	1,000	„	3 „
1,000	„	5,000	„	2 „
5,000	and upwards		„	1 „

The same exemptions, graduated scale, and allowances for children, were continued until 1805.

In 1806 the Act of 46 George III, cap. 65, was passed, by which the duty of 10 per cent. was imposed; the exemption was limited to incomes from trade under 50*l.* per annum, and withdrawn from incomes arising from realized property, and the allowances for children taken away.

An allowance was granted for incomes between 50*l.* and 150*l.* at the rate of 1*s.* for every 20*s.* by which the income is less than 150*l.*, the duty being charged at 10 per cent. in the first instance, and the allowance made out of the duty thus—

Income.	Charge.			Allowance.			Duty.		
£	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
150	15	–	–		—		15	–	–
149	14	18	–	–	1	–	14	17	–
148	14	16	–	–	2	–	14	14	–

and so on down to—

50	5	2	–	4	19	–	–	3	–
50	5	–	–	5	–	–	Exempt.		

The tax was repealed by vote of the House of Commons 18th March, 1816: 201 for, 238 against, majority against 37.

The Act of 5 and 6 Vict., cap. 35, by which the tax was re-imposed in 1842, was in its main provisions similar to the Act repealed in 1816, except that incomes under 150*l.* from all sources were exempted, and the duty imposed at 7*d.* on all incomes of 150*l.* and upwards, the income from occupation of land being taken at half in England and one-third in Scotland for three years.

The same rates were continued until 1852-53. In 1853-54, when the tax was first extended to Ireland, the principle was introduced of a lower rate of duty for smaller incomes, viz., 100*l.* and under 150*l.* liable at 5*d.*, 150*l.* and upwards 7*d.* From 1854-55 (excepting for 1858-59), two different rates of varying amounts obtained up to 1862-63, viz.: 1*s.* 2*d.*, 1*s.* 4*d.*, 1*s.* 4*d.*, 7*d.*, 9*d.*, 10*d.*, 9*d.*, 9*d.*, higher; 10*d.*, 11½*d.*, 11½*d.*, 5*d.*, 6½*d.*, 7*d.*, 6*d.*, 6*d.*, lower.

In 1863-64 one rate was resumed but incomes under 200*l.* were allowed abatement of 60*l.*, and under 100*l.* exempt. In 1872-73 incomes under 300*l.* were allowed an abatement of 80*l.* In 1876-77 incomes under 400*l.* were allowed an abatement of 120*l.*, and incomes of under 150*l.* exempt.—*Fred. B. Garnett, 17th April,* 1888.

VII.—*General Conclusions.*

I have now placed before you a rough sketch of the systems of progressive taxation in three cantons of Switzerland. It would have been easy to have found other examples from that country, as in it the methods of taxation are exceedingly diversified, but these, which are among the most recent, appeared to me to illustrate in an adequate manner the principle of progressive taxation. This may be roughly described as the idea that in proportion as the income increases, a larger sum can be spared by the owner of that income to meet the exigencies of the State.

This subject has already been frequently discussed in this country, and the practical question will surely arise, "Is such a "system applicable to ourselves? Is it a principle which would "suit our own fiscal requirements, and would it work for the "general advantage of the community at large?"

A Society like this, which regards economic questions in a dispassionate manner, is a very fitting court of appeal before which such a cause may be pleaded. I desire therefore to place the matter before you, not from any sectional or class point of view, but from the standpoint of the economic advantages and disadvantages which would result from its adoption.

In commencing this discussion, and referring to the system at present in use among ourselves, I may be allowed to quote one sentence from the paper by Mr. Elliott mentioned above, which places the historical part of the question before us in a few words:—

"I may perhaps say that the experience of the past makes it "perfectly clear that any further graduation can only be effected "by following the lines of the system upon which it is at present "attained, viz., by the allowance of abatements, and that any "attempt to aggregate in all cases the income arising from various "sources accruing to each single individual, can only result in the "failure which attended a similar method a century ago."

There is hardly any branch of study in which the history of the past is as valuable as in fiscal questions. Bearing the remarks I have just quoted in mind, we may refer with advantage to the inaugural address of our President (Right Hon. George J. Goschen), delivered at the commencement of this session. In his summary view of the "Distribution of Wealth" among us, Mr. Goschen showed that in reference to the probate duty it is not on large estates that the revenue relies, but on the great mass of the smaller ones. Nor are the large fortunes increasing among us at the present time. The income tax returns, Mr. Goschen stated, showed distinctly that the incomes above 5,000*l.* a year were diminishing. The returns of tenements assessed to the inhabited house duty confirmed this. Between 1880 and 1886 houses above the value of 1,000*l.* a year had decreased. These statements, based on official returns, are supported by the experience of business. Between 1850 and 1885 there had been a large increase in the number of insurances on life, but the average amount of each policy was less.

The whole tenor of Mr. Goschen's address went to show that wealth is more evenly distributed among the inhabitants of this country than previously, and that the larger incomes were shrinking. Hence if a taxation beyond the proportion borne by other descriptions of property were placed on the larger fortunes, it would be found to produce a diminishing revenue.

I will now turn back again for a moment to Switzerland, and to an instance of the manner in which the law imposing progressive taxation works there. The illustration which I will give is taken from the published account of the conferences held at the School of the Political Sciences on "Les solutions démocratiques de la "question des impôts," between February and April, 1886, by M. Leon Say, which I referred to before.[1] At the first of these meetings, M. Leon Say stated in opening the general question as to the manner in which progressive taxation works:—

---

[1] "Les Solutions Démocratiques de la Question des Impôts. Conférences faites à l'École des Sciences Politiques;" par M. Leon Say. Paris: Guillaumins, et Cie., 1886. 2 vols.

"There would be no end to what would have to be said, if it "was desired to give a description of the abuses springing from "laws of this nature. Besides the history is well known. In "Switzerland, for example, where the communal legislation is very "free, because the autonomy of the commune is absolute, fiscal "laws have sometimes been made with a reference to a single "individual, one rich citizen, whose income or property it was "desired to hit, in order to enrich the commune from his spoils, "and to increase thus the resources of the local budget.

"One of my friends from Geneva told me, a short time since, "the strange fact which I will proceed to relate.

"A sickly old man wished to fix his abode in a canton neighbouring to that in which he usually lived, and hired or bought "there a property on which he proposed to finish his days, which, "alas, were now numbered, for the illness from which he suffered "was serious, and his age was advanced. As soon as the representatives of the commune learned that so wealthy a dying man "had reached their territories, they hastened to propose to the "municipality a new law which should secure to the commune a "large part of his property.

"The law is agreed to: it is brought to the knowledge of the "new comer. The dying man revolts against it, and cries out that "he is not yet dead, and that if they are resolved to wrest his "property from him, he will gather up strength enough to return "and die at Geneva; for it was from Geneva that he had come. A "debate follows on this, negotiations between the commune and "the sick man, and after some time a kind of compromise. The "sick man consents to die on the property where he has just "established himself, and the commune makes a law which the "dying man considers reasonable, and which, without appropriating too large a slice of the property, at least secures some "resources to the commune."—Vol. i, p. 20.

Friends of my own have told me that negotiations similar to those described in this story are not uncommon. They say that when the assessor comes to a wealthy man to ascertain his income, he will answer, "I am willing to pay so much; if you assess me "higher I will leave the canton," and, after some negotiation, a sum is fixed by mutual agreement.

The moral degradation which such a state of things must produce may be imagined. Cheating the revenue becomes, like smuggling, no offence in the eyes of the offender. Our own income tax, no doubt, produces evasions. There is said to be a limit to the taxpayer's conscience, and that this becomes more elastic in proportion as the charge is heavier; that some men would state their incomes more truly when the tax was 2*d.* in the £ than they will when the tax is 7*d.* or 8*d.* This is a lamentable thing. The honest feel that they are paying what the dishonest evade. It is an evil which the law should not intensify.

If the Swiss system produces evasions within the narrow limits of very small districts, of cantons which really have populations not exceeding those of some English parishes, in neighbourhoods where every one is known to all his fellow citizens, where his property, his mode of life, his surroundings, are open to all, what would the result be among our own far larger populations?

From this side of the question such a tax could not be expected to work well here.

And on the economic side, the opinion of all our sounder masters of the law is against it, or at least that it should be applied with great moderation. The first rough idea of the unthinking man, when contemplating the accumulated wealth of others, is, what a field for taxation all this property presents; "they will "never feel the charges put upon it;" but reflection reminds him of the fate of the possessor of the goose that laid golden eggs.

The real incidence of taxation is often on different persons from those on whom it seems to fall. The first duty of the legislator is to impose taxes in such a manner as will injure the prosperity of the country the least; a tax which struck capital at its roots would strike the prosperity of the country at its roots as well, and the first to suffer would be the working classes.

In saying this I can in this place only touch the outside fringe of the question. Luxuries have always been felt to be suitable subjects for taxation; and wealth should bear its share. But a tax which would greatly diminish the rewards of industry to the man who has worked hard, which would encourage extravagance in the administrator, cannot be recommended by the economist, however sincerely he may regret the gulph which intervenes between extreme poverty and extreme wealth. A system which is economically wrong is scarcely defensible from a moral point of view.

DISCUSSION *on* MR. PALGRAVE'S PAPER.

MR. F. HENDRIKS said that he was very conscious of his inability to discharge properly the duty of commencing the discussion on Mr. Palgrave's very interesting paper. Although ideas might differ as to the advisability or non-advisability of a progressive system of taxation, there could be no difference of opinion as to the great care and research that Mr. Palgrave had devoted to the subject. The system of progressive taxation, as he could bear witness, having been in Switzerland last autumn, had been during last year the subject of very lively discussion. At the same time, it was not at all a new subject in Switzerland. These discussions had been going on for quite two generations past. He distinctly remembered that Pellegrino Rossi, the eminent Italian economist, in one of his writings published more than half a century ago, stigmatised the progressive taxation of Switzerland, and particularly that of the canton of Zurich, as being excessively tyrannical. He apprehended that this meeting would come to very nearly the same conclusion with respect to some parts of it, and that with regard to its incidence on realised capital it was more than tyrannical—it was even of a confiscatory character. There was no doubt that the proportionality of taxation (and the progressive scale of taxation was included in that word) had been for many generations a burning question. It had always been so, and must ever remain so: in the nature of things there must always be a current of opinion tending in that direction, and a current tending against it. If it was considered that there were but two methods of taxation—the indirect system, in which things only, and not persons, were impinged upon by the fiscal system, and the direct system of taxation, in which persons only, to the exclusion of things, were impinged upon, it would be seen that there must always be a conflict of opinion. It was quite clear that no nation at the present time could venture to get its revenue wholly from one of those two sources; it must combine the two methods; hence the conflict would always go on. He apprehended that the question would always remain *in statu quo*—that it would remain amongst the indeterminate problems awaiting solution as impossible equations. There was no final adjustment of the case. However, the matter was rather one of degree than of principle. Up to a certain point there was no doubt that progressive taxation might be resorted to by all countries. It was so in the present working of the fiscal system of all great nations. In some respects he thought it might be shown that the Swiss system did not err (if it were an error) in that direction even to the same extent as the system adopted in this country. Taking for example the income from earnings, it was quite clear from the figures cited by Mr. Palgrave, on the high authority of their respected Member of Council, Mr. Elliott, that the taxation in England differed fivefold in the case of an annuity of 150*l.* a year derived from earnings in this country and an annuity of 400*l.* From Table XIV in Mr. Palgrave's paper it would be seen that the difference in Switzerland of the taxation of incomes from the same comparative amounts of yearly earnings was not quite so great. He could not compare them with mathematical nicety because the items did not range exactly in the same way; but there was certainly a less discrepancy in the progression of the Swiss ratios of the tax per £. It would be recollected that in Mr. Elliott's table an example was given when the income tax was 8*d.* in the £. In all assessments at that rate in the £ it was $1\frac{6}{10}$*d.* in the £ on incomes in this country derived from earnings of 150*l.* a year; and it progressed up to 8*d.* in the £ on incomes of 400*l.* a year—that was five times the initial rate of pence in the £ at the lower limit of income from earnings. The same ratio of difference would hold good in England whatever might be the rate per £ of income tax. In Switzerland the progressive increase was certainly less. However, it would be seen that the difficulties in Switzerland began where the higher jumps in the scale took place. Even there—he was citing the example of the canton Basel-Stadt—it would be seen, when they got to incomes of 800*l.* a year, that this progressive scale in the tax on yearly earnings did not impose a higher rate of taxation than $5\frac{1}{2}$ per cent. Inasmuch as a higher rate of taxation had not been unknown in England, in addition to other and in some instances progressive taxes, he did not see in ordinary times of peace that the Swiss system of progressive taxation was very unjust or deserved in any way condemnation as being tyrannical or confiscatory so far as regarded the annual earnings of the people. But coming to the scale which it imposed upon realised property, there was an enormous difference. There the rate of taxation was at least double. It began at something like $2\frac{4}{5}$ths per cent., and ran up to $10\frac{3}{8}$ths per cent. That was not only on realised capital, such as that from funded property, but also upon furniture, objects of art, and other movable property, which was capitalised at its value, and the tax imposed upon the income as at a given rate of interest on such capitalised value. It was quite clear that a man who collected a gallery of pictures in a country like Switzerland, had to pay a very heavy annual fine to the State for its possession, and it seemed very much like confiscation when they got to figures like $10\frac{3}{8}$ths per cent., which was so large an outlay that a man well off, he thought, would do well not to make Switzerland his domicile. It must have the effect of deterring rich people from living in that country. The whole error of the Swiss system seemed to be in not realising where the shoe pinched—where taxation ended and something like confiscation began. Of course Switzerland was a country peculiarly exposed to very exaggerated systems of that kind. The cantons consisted of a small number of people amongst whom there were very few rich; and it had always been the disposition of mankind for the majority in power to endeavour to shift taxation to the shoulders of their neighbours. For instance, in the canton of Basel-Stadt they had imposed the enormous amount of 90 per cent. of the taxation upon 3 per cent. of the population. That led him to a few statistical observations. In the last number of the *Journal* their esteemed correspondent in Berlin, Dr. Engel, had contributed some analyses he had made of the incomes of the community in Germany. Germany, like Switzerland, had not as many rich people in proportion to the rest of the community as this country. According to Dr. Engel's figures, the number of people who had incomes in Germany above 6,000 marks (about 300*l.*) and upwards did not constitute more than 1 per cent. of the whole community. What would be said of any system of taxation in Germany which would impose upon that 1 per cent. of population 30 per cent. (which would be the proportion in Switzerland) of the whole expenditure of the German empire? So sensible and so equitable a people as the Germans would say that it was nothing more than confiscation and tyranny. This comparative illustration of the working of the Swiss system was, it seemed to him, a *reductio ad absurdum*, and showed that for any great country to follow the example of Switzerland would be simply madness. In this country we had gone to the extreme verge of progressive taxation by the system of exemptions which at the present date, and indeed in almost all previous ages, was in force. That was an old English custom; and, as a good example of it, he might point out that, as long ago as the time of Henry VI, when an income tax was imposed in the shape of subsidies, there were four progressive rates of taxation: there were poor people who were not touched at all; people who were rated at 6*d.* in the £; people with larger estates at 1*s.* in the £; and very rich people at 2*s.* in the £. He hoped that good system of a certain reasonable amount of progressive taxation, but not too much, would always be continued, and that the example of Switzerland would not be considered as any precedent for further progress in the direction of progressive taxation.

Mr. F. B. GARNETT, C.B., said that the subject of Mr. Palgrave's very interesting paper happened to be one upon which he was qualified to speak from practical experience. So far as regards the administration of the income tax in this country, and he had no hesitation in saying that whatever possible merits there might be in a graduated system applied to small communities like those which Mr. Palgrave had taken as the text of his paper, no such system could by any possibility be acceptable in a larger community like England. He was perfectly satisfied that if Sir Robert Peel, when he introduced the present income tax in 1842, had attempted to revert to the arrangements which existed under the former income tax Acts, in which incomes of various amounts from 50*l.* to 150*l.* were chargeable at different rates, according to a minutely graduated scale, and in which also abatements were allowed on account of children, according to a complicated system, the income tax, instead of subsisting as it had done from 1842 to the present time, and with a prospect of still further endurance, would very likely have been condemned at the end of the three years for which it was originally imposed. In order to apply the principle of a graduated income tax generally, it would be indispensable that there should be the means of ascertaining the total incomes of all persons from whatever sources they arose. The requirement of a return of the whole income from each individual in this country was abandoned in the year 1803, and the only incident of the present income tax which had made it at all possible to be continued as a permanent tax in this country, was that, as was the case in the later years of Pitt's administration, no one was now compelled to render an account of his aggregate income. A man might be engaged in trade or commerce from which he was getting no profit whatever; he might be living entirely upon other resources derived from realised property and investments or shares in companies, &c., the income from which, however, was not required to be declared, being taxed at its source, according to the rate in the £ for the time being; and no one was compelled to bring the several amounts into one focus, and to put down all the items of his income. To do so would have been regarded by the people of England as a measure so inquisitorial that they would never have submitted to it. The only cases in which persons were necessarily required to state in one sum their incomes from all sources were the exceptional cases of persons claiming the privilege of exemption, or of abatement for incomes under 150*l.* a year, or under 400*l.*, respectively, being the classes who had the least reason to object to a disclosure of the items and sources from which their income was derived, with the view of showing the total amount of their income, in order to obtain a benefit from so doing, as such incomes were most easily estimated from external circumstances. But persons whose incomes were above those limits were too often persons who might have reasons for wishing to be thought better off than they really were, or were living beyond or below their ostensible means; and they were just the persons who would most object to be compelled to state "my income is 500*l.*, 1,000*l.*, or 2,000*l.* a year," and to show the particulars in order that it might be ascertained what proportion of taxation should be applied to them under any graduated scale, dependent on aggregate income. He thought, therefore, that experience had shown that a system of graduated income tax would never be applicable to a country like this. The trouble and inconvenience of obtaining the allowances on account of children under the provisions of the several Acts in force from 1798 to 1805, were indeed the occasion of omitting any like provision in the Act of 1806 (46 Geo. III, cap. 65), which Act continued in force until the abolition of the income tax in 1816, and this last mentioned Act was adopted with comparatively few modifications as the basis of the renewed income tax in 1842 by Sir Robert Peel.

Mr. VERNET, Agent and Consul-General for Switzerland, said that his relations being mainly with the central Government, he had little occasion to study the laws of the separate cantons, and he did not feel competent to discuss in detail the elaborate paper by Mr. Palgrave, which he had followed with great interest. He knew, however, that in the Canton de Vaud especially the new law had produced great irritation among the richer classes, and he had heard that wealthy foreigners who had formerly bought property in the canton had tried to sell it when the law was being discussed; he said "tried," because he believed that property had become very unsaleable in consequence of the new taxes.

Mr. T. H. Elliott said he was sure that every member of the Society would be very glad to have had the opportunity of hearing Mr. Palgrave's paper, and of reading it in the Transactions, but it would be particularly valuable to members of the Society who like himself were especially interested in the subject of taxation. Those whose business it was to deal with questions relating to the administration of taxes, would feel themselves under an obligation to Mr. Palgrave for having so fully described a very interesting and unique system of taxation in a foreign country. No one knew, except those who have tried it, how difficult it was to form a clear idea of, and to put into understandable English, any system of foreign taxation. He only wished that more members of the Society would do what Mr. Palgrave had done. The one conclusion to be drawn from the paper was that whenever the subject of progressive taxation was considered, it would be known how not to do it. If there was one fact which stood out in a clearer light than any other, it was that any attempt to introduce progressive taxation on such a system as Mr. Palgrave had described as existing in Switzerland, would be utterly impossible in this country. There were two cardinal sins in the system. In the first place there was no broad distinction between the various classes—there were too many lines of demarcation, and consequently too many people bordering on those lines. Any system of progressive taxation must run in leaps and bounds, so as to have a large mass of people about whose position in the scale there was no question. When they came to a classification of incomes varying from 32*l.* to 48*l.*, from 48*l.* to 60*l.*, and so on, they at once brought themselves face to face with an innumerable mass of questions. It would be very difficult to decide whether a man's income might be taken at over 32*l.* and under 48*l.*, or over 48*l.* and under 60*l.* They must have broad distinctions, if they were to have any distinctions at all. In this country there were such broad distinctions, and if only the element of breadth was kept in view the existence of one or two more was not an impossible thing. The other sin, as Mr. Garnett pointed out, was that of the aggregation of all classes which the Swiss system necessitated of incomes. He had seen the schedule of the property of many wealthy men in this country, and if those men attempted to make out income tax returns setting forth their total incomes from every source, it would be a work of great magnitude. There were men who owned two or three hundred descriptions of property, having investments of 5,000*l.* here and 5,000*l.* there; and any attempt to aggregate those in a wealthy country like England would be practically impossible. He could not say that he was not disposed to go a little further than Mr. Palgrave in approving of progressive taxation; but the only direction in which it could be advantageously effected was probably in the direction pointed out by John Stuart Mill, viz., in the case of death duties. There already was a charge of 2 per cent. in the case of estates under 500*l.*, 2½ per cent. between 500*l.* and 1,000*l.*, and 3 per cent. over 1,000*l.* He was inclined to think that the probate duty taxed very heavily and unduly small estates between 1,000*l.* and 5,000*l.* as compared with those of higher amounts. There were many people, especially among the professional class, who after saving a sum of money by thrift, were not able to leave more than 4,000*l.* or 5,000*l.* for the maintenance of their widows; and a tax of 3 per cent. on 5,000*l.* was a very heavy tax. He was not sure that the time would not come when some revision would not be possible. The fact was that graduated taxation was a very good servant, but a very bad master, and although he should be inclined to venture out into the gulf a little further than Mr. Palgrave, with the hope that he might get safely back to shore, yet with Mr. Palgrave he was convinced that any step in the direction of graduated taxation ought to be taken with the profoundest caution, because they might be over confident and too enthusiastic, and the troubles resulting might be greater than the benefits which progressive taxation could possibly be made to confer.

Mr. STEPHEN BOURNE said that during the progress of the discussion an idea had been revived in his mind which had often crossed it on former occasions—whether in this country we did not approach much more nearly than was ordinarily thought to a system of graduated taxation, not by altering the incidence of taxation upon any one description of property, but by taxing it in so many different ways, that persons who had a large income really did pay a larger proportion by reason of the many sources from which their incomes were drawn upon. It was true that a man with a large income and a large family in this country contributed the same amount of percentage on his income as another; but having a large family to support, each of whom consumed taxable articles, he contributed more, and the money which he distributed among them, which was spent on taxable articles, really became sources of income upon which taxes were levied. The man who had a large house, and maintained a large establishment with many servants, consumed tea, beer, and spirits, and even champagne, all of which were subjects of taxation. Adding together the amount of the various taxes a man of large income contributed to the State, it would be found that they rose very much more nearly in proportion to the extent of his income than was generally understood. That system might be pursued by returning to the old system of levying more taxes. There was, he knew, a feeling that we had lost many taxes which might well have been retained. He did not share that feeling very much, because in the case of corn, timber, sugar, and various things of that kind, the necessity of relaxing the taxation arose not from the inapplicability to the purpose, but from the trade difficulties which were imposed when they came to be levied. Various other sources of automatic taxation might be resorted to. For instance a penny stamp paid on cheques was a tax upon a man of income, although it might be a small one. But a large number of taxes of that kind would hit the possessor of a large income in greater proportion than the possessor of a small one. He thought that if such an investigation were pursued, it would be found that, that truth would be established to a much greater extent than was generally supposed.

Sir Rawson W. Rawson said that in reading Mr. Palgrave's paper he was struck with a number of features which he had not time, or perhaps skill, to bring before the meeting. There was one remarkable feature to which he would call attention. He confessed that the apparent injustice, inequality, and recklessness with which the Canton de Vaud had made changes in the years 1886 and 1887, had struck him with a sense of surprise. At pages 249—51, there were three Tables, XIX, XX, and XXI. The first related to the tax on real property. There the original tax on a property of 40,000*l.* was 56*l.* It had been increased by the laws of 1886 and 1887 to 77*l.* 10*s.* That was between 20 and 30 per cent. He observed that below 4,000*l.* there had been a reduction of the tax, and above 4,000*l.* there had been a rapid increase, resulting at the highest figure in the scale in only the difference between 56*l.* and 77*l.* 10*s.* Taking the next table—tax on capital—the change on the 40,000*l.* had been from 64*l.* to 145*l.*, about 120 per cent. or more; and there had been a reduction upon all capital below 2,000*l.* The turning point, which was 4,000*l.* in the case of real property, had become in this scale of taxation upon capital 2,000*l.* Imagine in this country the change of a tax upon capital from 1 per cent. to 120 per cent.! Taking the tax on pensions and incomes, the increase there at the highest rate of 2,000*l.* a year was from 64*l.* to 116*l.*, which was about 90 per cent., and there the turning point was 140*l.* He could not conceive that such differences and such an increase could be justified upon any principles either of economy or patriotism. It was sufficient to crush capital, sufficient to prevent any Swiss citizen aspiring to rise by means of industry and applied intelligence, and it indicated the power of the democracy to squeeze those who by intellect and exertion had raised themselves above their fellows.

Mr. F. S. Powell, M.P., said he entertained some doubt whether the increase of death duties would result in a corresponding growth of income. There was no tax which could be more easily evaded than the death duty. If they had a low death duty, or none, the owner of the property would continue the process of accumulation, and when he died the result of his savings and efforts would be distributed among his children. But if they levied a heavy death duty, then, he thought, they held out a temptation not to wait for the supreme hour when we must all part with our goods, but to anticipate that date by a distribution amongst the sons and daughters as they became settled in life. If there be a burdensome death duty, by withholding the gift until it was no longer a gift, they were injuring the children's future, and diminishing to a sensible exent their inheritance. He did not himself see how any Chancellor of the Exchequer could search into motives in such a matter, and render such an action one of a penal character; but he thought it very possible if we had a system of heavy death duties for large amounts, that that which was now done in some cases where a parent had great confidence in his children or warm affection, might become a national habit and a usage in exactly the opposite direction to that which now prevailed in this country. That change of practice would be fatal to the growth of those heavy death duties. It would, no doubt, in the origin be demoralising, and result in the deliberate evasion of taxation; but he believed it would gradually become a custom. Public conscience would cease to rebel against that custom, and he thought the national exchequer would suffer in the long run. He concurred with the observations made in the concluding portion of the paper as to the mischievous effect of a high death duty. It would no doubt check industry and hinder accumulation; and he thought in a country like England the employment of capital at home should be as far as possible encouraged. It would be dangerous to revert to that which occurred some years ago, when there was a large investment in foreign stocks of various kinds. He thought it was the wisdom of those who controlled our national finances (leaving aside any question of protection) to adopt such a course of policy in finance and in other respects as should encourage capitalists to invest their capital on our own shores, and in this manner to increase their own personal resources. Any system of progressive taxation worked in the opposite direction. When it was done to a limited extent it might be comparatively harmless; but when carried to a large extent considerable mischief must arise to the State and to the individual.

Mr. E. J. HARDCASTLE having made a few remarks,

Mr. PALGRAVE, in reply, said that on being called upon to answer objections, he was in the very enviable position of having none to reply to. He had been asked to give an example from Zurich; but he had not included the Zurich law on taxation in the statement laid before them. He had been unable to show what the working of the existing system in Basel was at the present time, because the law had been in working order for so short a period that he had not been able to obtain the official papers showing what the results were. He had, therefore, been compelled to give particulars of the preceding law, which had been in force six years. The system of progressive taxation in Canton Basel-Stadt had been in existence for forty years. It had since been altered on three occasions, and every time in the direction of becoming more severe, or more progressive in character, upon the propertied classes. He might remark, on Mr. Garnett's observations, that it was only the extremely admirable and gentle way in which the income tax had been handled in this country, that had enabled the country to bear it up to the present time.

CONDITION *and* OCCUPATIONS *of the* PEOPLE *of* EAST LONDON *and* HACKNEY, 1887. *By* CHARLES BOOTH, ESQ.

[Read before the Royal Statistical Society, 15th May, 1888.
Dr. T. GRAHAM BALFOUR, F.R.S., a Vice-President, in the Chair.]

CONTENTS:

	PAGE		PAGE
I.—Introduction	276	V.—The Classes	288
II.—Description of the District	279	VI.—The Question of Poverty	293
III.—Sections and Classes	283	VII.—A Comparison of the East End with the rest of London	300
IV.—Percentage Tables	285		

I.—*Introduction.*

THE paper I have the honour to present to the Royal Statistical Society to-night is a continuation of that read in May last year, in which I described the population of the Tower Hamlets. I have now extended the same system of inquiry to the Hackney School Board Division (comprising the registration districts of Shoreditch, Bethnal Green, and Hackney), with its 440,000 inhabitants, and am able to deal in all with a district containing 900,000 inhabitants, composed of the following unions of parishes or registration districts:—

East London—	
Shoreditch	124,000
Bethnal Green	130,000
Whitechapel	75,992
St. George's-in-the-East	48,686
Stepney	62,720
Mile End Old Town	112,329
Poplar	169,231
Hackney	186,000
Total	908,958[1]

---

[1] As fully explained in the Appendix to my last paper, the population of Tower Hamlets (and of each registration district therein) for 1887 was estimated by comparing the number of children of school age then scheduled by the School Board authorities with those existing at the date of the census (1881), it being assumed that the population of each parish had increased or decreased in the same ratio as its school children. In the Hackney School Board division, however, no such basis was available, and so (acting on a suggestion kindly made by Dr. Longstaff) the following method has been adopted in dealing with the three registra-

The tables for Whitechapel, Stepney, Mile End, and Poplar are the same as were printed in my last paper, with some minor corrections. That of St. George's has been revised and considerably altered. This district was the first attempted in 1886, and was very imperfectly done. It was the *corpus vile* of our experiments. The figures now given for this district are the result of a very careful revision last summer. The figures for Bethnal Green, Shoreditch, and Hackney are now given for the first time; but it is only Hackney which presents any very novel features. Bethnal Green and Shoreditch, in spite of some local peculiarities, are on the whole similar in character to the rest of East London, and the addition which they make to the figures already presented is rather one of quantity than of quality.

In submitting the whole thing over again, I run the risk of being considered tedious in the hope of being thorough. My original intention had been to accept the Tower Hamlets as sufficiently representing the whole of East London, and to carry my inquiry into some other part of London where different conditions of life were to be found. But the work done was too incomplete to be satisfactory; it needed rounding off in many ways, and it seemed better to make the whole of East London the unit of inquiry, and to give enough time to it. I hope, therefore, I may be excused for the extent to which what follows may be thought a repetition of my last paper.

Before laying the tables which divide the population by occupation and class before the Society, I wish to refer again to their basis, and to state my confidence in its validity. My information is obtained from the School Board visitors. Of these there are in all 66 in the district. These men are intelligent, and without any bias that I have been able to trace. They are in daily contact with the people, and have a very considerable knowledge of the parents of the school children, and especially of the poorest among them, and of the conditions under which they live. No one can go, as I have done, over the description of the inhabitants of street after street in this huge district, taken house by house and family by family—full as it is of picturesque details noted down from the lips of the visitor to whose mind they have been recalled by the open pages of his own schedules—and doubt the genuine character of the information and its truth. Of the wealth of my material I have no doubt, and if I fail in drawing the picture I desire to

---

tion districts of Shoreditch, Bethnal Green, and Hackney:—Comparing 1881 with 1887, the birth-rate for the whole of England and Wales is found to have decreased by 2·7 per 1,000. A similar rate of decrease is assumed to have taken place in the districts named, and the population is arrived at by multiplying the actual number of births in 1887 by this reduced ratio. The results obtained correspond closely with the estimates of the medical officers for the respective districts, which are calculated in a different way.

draw, the fault is mine. I am indeed embarrassed by the mass of my material, and by my determination to make use of no fact to which I cannot give a quantitative value. The materials for sensational stories lie plentifully in every book of our notes; but even if I had the skill to use my material in this way—that gift of the imagination which is called "realistic"—I should not wish to use it here. Of destitution and hunger there is enough, of struggling poverty still more, and of drunkenness, brutality, and crime only too much; no one doubts that it is so. My object has been to attempt to show the relation which poverty, misery, and depravity bear to regular earnings and comparative comfort, and to describe the general conditions under which each class lives. I do not come forward with any sovereign remedy for the evils which exist. My facts have not been gathered to support any view. I claim only that, to avoid foolish action, as much as to forward wise action, it is first of all necessary to take a large view, and understand in every sense the relation which different classes bear to each other.

My arbitrary division of the people into "poor" and "very "poor" has been criticised; but I am glad to know that the criticism comes from both sides. A great authority (Dr. Leone Levi), whose untimely death I and all of us are now grieving for, thought that with 20*s.* a-week a family could not be considered poor; while an evening journal "doubts if Mr. Booth has adequately "realised the struggles and privations of even the best paid of those "who figure in his tables—whether he has taken account of the "scantiness of their food, their clothing, their bedding," and adds that my entire pamphlet on the Tower Hamlets "reads too much "like a complacent and comforting bourgeois statement of the "situation." In reply to both criticisms I can only say that I have tried and am trying to learn how the poor live, and have studied and am studying the manner of life of those I place above the line of poverty, but frankly admit that my knowledge is incomplete. I shall, however, return to this part of my subject, and need only say now that I see no reason to change my definition of poverty, which I will here repeat. By the word "poor" I mean to describe those who have a sufficiently regular though bare income, such as 18*s.* to 21*s.* per week for a moderate family, and by "very poor" those who from any cause fall much below this standard. The "poor" are those whose means may be sufficient, but are barely sufficient, for decent independent life; the "very poor" those whose means are insufficient for this according to the usual standard of life in this country. My "poor" may be described as living under a struggle to obtain the necessaries of life and make both ends meet; while the "very poor" live in a state of chronic want. It may be their own fault that this is so; that is another question, about which also I shall have something to say by and by; my first business is simply with the numbers who, from whatever cause, do live under conditions of poverty or destitution.

The steps by which my conclusions have been reached were stated fully in the appendix to my last paper, and have been already printed in the *Journal* of this Society. The whole structure is built on three assumptions, which I will here repeat:—

(1.) That the numbers of married men with school children in each section, by employment imply a similar proportion in the same sections of married men without school children, and of other male adults. This, because the choice of employment is made before the epoch of school children, and the period of employment prolonged long after; the fathers of the school children of the day are but a section of a block which contains, all the while, old men and young, married and single, those with children, and those without, in every trade. Hence, having scheduled the heads of families with school children, I feel justified in dividing the other male adults in similar proportions.

(2.) That likewise the number of children of school age in each section implies the existence of brothers and sisters, older and younger, to be found living under the same home conditions. Hence I have added children and young persons of 13—20 to each section in proportion to the number of school children scheduled.

(3.) That the condition as to poverty of those with children at school in each section will safely represent the condition of the whole section; the younger men in some employments, and the older men in others, earn less money than those of middle age who are the fathers of the children at school, but both are at less expense. On the whole, therefore, the condition of the bulk will be better than that of the part we are able to test.

These assumptions fail as to Section 1 (loafers and semi-criminals), where there is neither family nor industrial life of a regular kind; and to meet this failure I have allotted to Section 1 a proportion from the unscheduled population before proceeding with the apportionment.

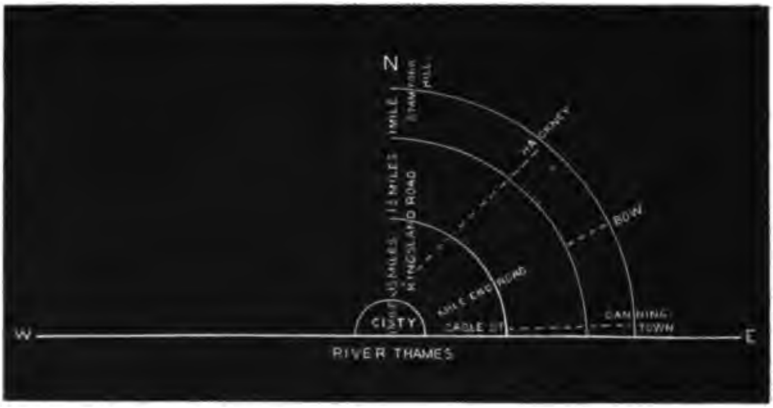
The information used may be taken as applying to 1887, having been collected for the most part from 1st January, 1887, to 1st January, 1888, and so far as possible a whole year was made the unit of time in considering the classification of the people.

II.—*Description of the District.*

If we consider London north of the Thames as a semi-circle of which the City is an enlarged centre, the district I am describing forms a quadrant, having for its radii Kingsland Road running

Google

due north, and Cable Street (continued as the East India Dock Road) running due east. Between these lie the Mile End Road (continued as the Bow Road to Bow), while a similar division more to the north may be made in the line of Hackney, dividing the quadrant into three equal segments, but the route to Hackney is deflected by Victoria Park, and no street exactly occupies the line:



The district also includes Hoxton—lying to the west of Kingsland Road—and Wapping, and the Isle of Dogs, formed by bends in the river, lying to the south of Cable Street and the East India Dock Road—but is otherwise co-extensive with this quadrant. The City itself has a radius of nearly a mile, and outside this London extends to the north and east from 3 to 4 miles. The greatest extension is at Stamford Hill, where the boundary is 4½ miles from Southwark Bridge, and the least at Bow, where it is 3½ miles from the same point. There is, however, less difference than these figures would seem to show in the actual extension of London, for from the City to Bow the entire space is built over, whereas at Stamford Hill and Clapton there are still some open fields, and further south and east the Metropolitan boundary includes the marshy land, unbuilt on, which skirts the river Lea. A circle drawn 3 miles outside the City boundary practically includes the whole inhabited district; and this may be divided into two parts—an inner ring of 1½ miles ending at the Regent's Canal, and an outer ring of similar width extending to Stoke Newington, Clapton, Homerton, Hackney, Old Ford, Bow, Bromley, and the East India Docks. The line of the Regent's Canal, which very closely follows the curve of the inner ring, marks a real change in the character of the district. Slight as this obstacle might be supposed to be, it yet seems to have been sufficient to gird in the swelling sides of London. It is also to be noted that it is in itself a girdle of poverty, the banks of the canal being, along nearly its whole length, occupied by a very poor population.

The inner ring consists of most of Shoreditch, Bethnal Green (excepting the Victoria Park end), all Whitechapel and St. George's, Wapping, Shadwell, and Ratcliffe, with the inlying portions of Mile End, all tightly packed with buildings, and crowded with inhabitants, except so far as occupied by business premises. Space and air are everywhere at a premium—the largest scale map shows as open spaces only a few churchyards and old burial grounds. A similar condition of things extends along the river bank, over Limehouse and Poplar proper, which lie within the outer ring, but the rest of this ring, consisting of Bow, Bromley, the outermost parts of Mile End and Bethnal Green, and the whole of Hackney, shows a different character. Not only are there some large spaces open to the public—Hackney Downs, London Fields, and Victoria Park—but the map begins everywhere to show more ground than buildings. The streets are wider; the houses have gardens of some sort; and in the houses themselves fewer people are packed. In the inner ring all available space is used for building, and almost every house is filled up with families. It is easy to trace the process. One can see what were the original buildings; in many cases they are still standing, and between them, on the large gardens of a past state of things, have been built the small cottage property of to-day. Houses of three rooms, houses of two rooms, houses of one room—houses set back against a wall or back to back, fronting it may be on to a narrow footway, with posts at each end and a gutter down the middle. Small courts contrived to utilise some space in the rear, and approached by archway under the building which fronts the street. Of such sort are the poorest class of houses. Besides the evidence of configuration, these little places are often called "gardens," telling their story with unintended irony. But in other cases all sentiment is dropped, and another tale about their origin finds expression in the name "So "and so's rents"—not houses, nor dwellings, nor cottages, nor buildings, nor even a court or a yard, suggesting human needs, but just "rents."

Another sort of filling up which is very common now is the building of workshops. These need no new approach, they go with, and belong to, the houses, and access to them is had through the houses. Some are even arranged floor by floor, communicating with the respective floors of the house in front by a system of bridges. These workshops may or may not involve more crowding in the sense of more residents to the acre, but they, in any case, occupy the ground, obstruct light, and shut out air. Many are the advantages of sufficient open space behind a house, whether it be called garden or yard, for economy, comfort, and even pleasure. Those of us who have seen no more, have at least obtained a sort of bird's-eye view of such places from the window of a railway carriage, passing along some viaduct raised above the chimnies of two-storied London. Seen from a distance, the clothes lines are the most visible thing. Those who have not such outside accommodation must dry the clothes in the room in which they eat, and very likely also sleep; while those, more common, who have a little scrap of yard or stretch ropes across the court in front, still suffer much discomfort from the close proximity to door and window of their own and their neighbours' drying garments. From the railway, there may be seen, also, small rough-roofed erections, interspersed with little glass houses. These represent hobbies, pursuits of leisure hours—plants, flowers, fowls, pigeons, and there is room to sit out, when the weather is fine enough, with friend and pipe and glass. All this goes when the workshop invades the back yard; and as to sanitation and health, I need hardly point out how essential is sufficient space behind each house.

Worse again than the interleaving of small cottage property or the addition of workshops, is the solid backward extension, whether for business premises or as tenements, or as common lodging houses, of the buildings which front the street; and finally we have quarters in which house reaches back to house, and means of communication are opened through and through, for the convenience and safeguard of the inhabitants in case of pursuit by the police.

The building of large blocks of dwellings, an effort to make crowding harmless, is a vast improvement, but it only substitutes one sort of crowding for another. Nor have all blocks of dwellings a good character in any respect. All these methods of filling up have been, and some of them still are, at work in the inner ring. Different parts show different characteristics, but this one is common to the whole district.

In Bethnal Green are found the old weavers' houses, with large upper room, now usually partitioned off to make two or three rooms or accommodate two families. In some cases the houses had originally only one room on each floor; and each floor, partitioned, now accommodates its family. In several cases a family (not weavers) have taken such a room, and while living in it themselves, let a weaver stand his loom or looms in it, getting rent for each loom. Weaving still lingers, but is undoubtedly dying out, and furniture making takes its place. To some of these weavers' houses there are still long gardens, and when these are in front they are often utilised for storing costers' barrows; but mostly the gardens have been built upon.

Of Shoreditch, or rather Hoxton, which is the most characteristic part of Shoreditch, I am tempted to quote from a description by Mr. Besant, which will be remembered by all who have read "The "Children of Gibeon." There is, he says, nothing beautiful, or picturesque, or romantic in the place, there is only the romance of life in it, 60,000 lives in Hoxton, every one with its own story to tell. Its people quiet and industrious, folk who ask for nothing but steady work and fair wages. Everybody quite poor; yet, he says, and says truly, the place has a cheerful look. There may be misery, but it is not apparent; the people in the streets seem well fed, and are as rosy as London smoke and fog will allow.

Contrasting with this, the northern and western part of Hackney, divided from Hoxton only by the canal, is almost entirely a middle class district. The old streets of De Beauvoir Town, or the new ones of Dalston and Upper Clapton, are alike of this kind, and in the old roads running through the new districts large and small houses are pulled down, and those of medium size erected.

The remaining portions of the district were briefly described in my last paper.

III.—*Sections and Classes.*

In Appendix A I give tables for each registration district separately, for the group which constitutes East London, and again for the whole area of East London and Hackney.

I have made no change in the sections by occupation into which the schedules divide the population, except that in Shoreditch, Bethnal Green, and Hackney, the artisan employments are more detailed than was found necessary in the Tower Hamlets. The classes also remain as before, and these I will briefly recapitulate:

A. The lowest class of occasional labourers, loafers, and semi-criminals.
B. Casual earnings—"very poor."
C. Intermittent earnings } together the "poor."
D. Small regular earnings }
E. Regular standard earnings—above the line of poverty.
F. Higher class labour.
G. Lower middle class.
H. Upper middle class.

Below I give the information comparatively, first by class and then by sections, stated in percentages.

Percentage Table of Classes.

Classes.	Shore-ditch.	Bethnal Green.	White-chapel.	St. George's.	Stepney.	Mile End.	Poplar.	Hackney.	Whole District.
A	1·0	1·2	3·3	1·5	1·5	0·8	1·1	0·9	1·2
B	9·4	16·0	8·9	15·1	15·8	6·8	12·9	8·6	11·2
C	10·6	12·6	10·7	12·5	6·1	6·0	6·2	5·8	8·3
D	19·2	14·9	16·3	19·7	14·7	12·6	16·3	8·4	14·5
	40·2	44·7	39·2	48·8	38·1	26·2	36·5	23·7	35·2
E	45·4	39·8	43·3	38·1	41·5	52·0	45·2	34·3	42·3
F	11·1	11·3	11·3	10·5	13·7	14·9	13·4	17·8	13·6
G	2·1	3·0	4·4	2·3	4·5	4·5	3·1	6·0	3·9
H	1·2	1·2	1·8	0·3	2·2	2·4	1·8	18·2	5·0
	59·8	55·3	60·8	51·2	61·9	73·8	63·5	76·3	64·8
	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

On the whole it will be seen that St. George's-in-the-East is the poorest district, though run very hard by Bethnal Green in this unenviable race. Taking the number of "very poor," Bethnal Green heads the list, and Stepney stands higher than St. George's. Mr. Jones, the able relieving officer of Stepney, disputes my conclusions here; and it must be admitted that the very high proportion of Class B in Stepney, compared to the very low proportion for Class C, is remarkable. The fact is that the line between casual and irregular employment at the docks and wharves and on the canal, where the men of Stepney find their living, is most difficult to draw, and I shall not regret it if, in spite of my "middle class "complacency," I have in this instance painted things darker rather than brighter than they truly are.

I may here draw your attention to the many coloured map hanging on the screen, which I have called the Map of East End Poverty. Although it is on a large scale—25 inches to the mile—it requires a near view, and even needs a magnifier to be seen properly. It has been tinted with various shades of colour—from pink, through violet and blue, to black—to represent the condition of the people. The colours correspond in effect with my division by class; black and dark blue represent A and B, while light blue serves for C and D, and crimson represents E F and G, and light pink H. I had to make the street my unit, and have coloured the mixed streets violet. An undertaking of this kind cannot be more than an attempt; but I recommend this graphic method of representing the condition of the people as one most easily to be comprehended, and, what is still more important, most easily to be verified. The map covers East London, with the exception of Poplar and part of Hoxton. No single individual has an intimate knowledge of the whole of this district, but taken piece-meal it is not difficult to find those whose knowledge may be as great, or even greater, than that of the School Board visitors. Part of the map has been already checked by relieving officers and others, and I desire to revise the whole of it in this way. So far as it has gone, the map has stood the test of criticism very fairly. Errors have been found, but not serious errors, and most of these were found to lie rather in the translation of fact into colour than in the facts themselves. The map is best seen by daylight, and the opportunity to examine it will be gladly given to anyone who desires to do so, and will communicate with me.

IV.—*Percentage Tables.*

Dividing the population by sections and working in percentages, we have the following table:—

Percentage Table

		Shoreditch.		Bethnal Green.		Whitechapel.	
1. Lowest class			0·7		0·9		2·9
2. Casual labour	Labour...	16·1	2·7	18·7	4·6	18·1	4·1
3. Irregular labour			2·1		2·2		2·0
4. Regular work, low pay			4·1		3·9		2·6
5. „ „ ordinary pay			6·6		7·2		8·6
6 Foremen, &c.			0·6		0·8		0·8
7. Building trades	Artisans.	35·4	6·9	29·8	4·4	9·7	1·8
8. Furniture, wood work, &c.			13·2		14·6		2·5
9. Machinery and metals			4·3		2·9		1·2
10. Sundry			11·0		7·9		4·2
11. Dress		9·5	7·9	11·9	9·9	24·8	18·2
12. Food preparation			1·6		2·0		6·6
13. Railway	Sundry wage earners	9·7	0·6	7·3	1·0	5·3	0·7
14. Roads			1·2		0·7		0·9
15. Shop assistants			2·8		2·5		1·5
16. Sub-officials			1·2		1·1		1·5
17. Seamen			0·1		0·1		0·2
18. Other wage earners			3·8		1·9		0·5
19. Home industries	Small profit earners	10·1	2·9	14·2	3·9	19·9	1·7
20. Small employers			2·6		3·1		5·3
22. Street sellers			1·5		3·2		3·9
23. General dealers			0·7		0·9		4·1
24. Small shops			2·1		2·8		4·2
26. Coffee houses			0·3		0·3		0·7
21. Large employers	Large profit earners	2·4	0·1	2·2	0·3	4·0	0·6
25. Large shops			1·8		2·1		2·4
27. Licensed houses			0·5		0·7		1·0
28. Clerks, &c.		3·1	2·7	2·2	1·8	2·4	1·8
29. Sub-professional			0·4		0·4		0·6
30. Professional			0·3		0·4		0·3
31. Ill or no occupation			0·2		0·3		0·6
32. Independent			0·1		0·1		0·1
33. Semi-domestic	Female heads of families	4·3	1·8	4·1	1·8	3·4	1·5
34. Dress			1·0		0·8		0·6
35. Trades			1·0		1·0		0·7
36. Employing and professional			0·1		0·1		0·1
37. Supported			0·3		0·3		0·4
38. Independent			0·1		0·1		0·1
39. Other adult women			8·2		7·0		8·5
40. Unscheduled houses			—		—		—
			100·0		100·0		100·0

In studying this table it is easy to trace the changes in the character of the population from district to district—from St. George's-in-the-East, with its maximum of casually employed labour, to Shoreditch, with its maximum of artisans—from Whitechapel, with its very large proportion of small dealers, to Poplar, with its maximum of sub-officials and shop assistants—from Hackney, with its well-to-do suburban population, to Mile End, which, containing a little of everything, very closely represents the average of the whole district. There is nothing surprising nor altogether new in *of Sections.*

St. George's.		Stepney.		Mile End.		Poplar.		Hackney.		Whole District.	
	1·3		1·2		0·7		0·9		0·7		1·0
38·2	9·0	38·6	10·9	22·7	2·9	32·1	7·7	11·2	1·7	22·3	4·8
	5·9		3·3		2·2		2·7		1·4		2·4
	6·8		4·7		2·8		8·0		2·8		4·4
	13·4		14·8		12·4		9·9		4·4		8·7
	3·1		4·9		2·4		3·8		0·9		2·0
11·3	2·4	19·0	4·2	19·7	5·6	26·1	7·5	19·1	7·2	23·0	5·7
	2·9		5·4		5·2		6·1		4·2		7·3
	1·9		5·9		3·6		8·5		1·8		4·0
	4·1		3·5		5·3		4·0		5·9		6·0
13·8	9·4	3·2	1·3	9·7	5·3	3·8	2·3	5·6	4·6	9·0	6·6
	4·4		1·9		4·4		1·5		1·0		2·4
6·9	0·7	7·8	0·5	10·8	0·8	11·3	2·3	8·7	1·0	9·0	1·1
	0·5		0·6		1·7		0·8		1·7		1·1
	1·7		1·5		3·6		1·8		2·8		2·4
	0·7		1·7		1·9		1·8		1·2		1·4
	2·0		2·8		1·3		3·4		0·1		1·2
	1·3		0·7		1·5		1·2		1·9		1·8
11·6	1·9	9·2	1·6	11·5	1·8	6·7	1·0	8·2	2·3	10·7	2·2
	2·8		2·0		3·1		1·3		2·4		2·7
	2·0		1·5		1·2		0·8		1·0		1·7
	0·8		0·6		2·3		0·5		0·5		1·1
	3·8		2·8		2·9		2·8		1·8		2·7
	0·3		0·7		0·2		0·3		0·2		0·3
2·4	0·2	3·8	0·4	3·7	0·5	2·3	0·2	1·7	0·2	2·8	0·3
	0·9		2·2		2·3		1·4		1·3		1·8
	1·3		1·2		0·9		0·7		0·2		0·7
2·1	1·6	4·7	3·4	5·7	5·3	5·8	4·1	9·9	8·7	5·3	4·3
	0·5		1·3		1·4		1·7		1·2		1·0
	0·1		0·7		0·6		0·7		0·7		0·5
	0·4		0·3		0·3		0·4		0·2		0·3
	0·1		0·2		0·4		0·3		0·3		0·2
4·6	2·2	3·8	1·5	4·2	1·7	3·7	1·8	3·2	1·6	3·7	1·7
	1·2		0·9		1·2		0·6		0·6		0·8
	0·8		0·6		0·4		0·6		0·3		0·6
	0·1		0·1		0·2		0·1		0·1		0·1
	0·3		0·5		0·4		0·4		0·3		0·3
	—		0·2		0·3		0·2		0·3		0·2
	7·2		7·5		9·0		5·9		8·6		7·7
	—		—		—		—		21·9		4·5
	100·0		100·0		100·0		100·0		100·0		100·0

this, but the information contained in the table may be valuable as having a genuine statistical basis, and covering ground which the official census does not fill.

For Shoreditch, Bethnal Green, and Hackney, I have classified the artisans more fully than for the Tower Hamlets, where they are of less consequence, and I restate the figures to introduce this extra information.

Percentages of Artisans.

Artisans.	Hackney Division.			Tower Hamlets Division.					Whole District.
	Shoreditch.	Bethnal Green.	Hackney.	Whitechapel.	St. George's.	Stepney.	Mile End.	Poplar.	
Building trades	6·9	4·4	7·2	1·8	2·4	4·2	5·6	7·5	5·7
Furniture and woodwork	13·2	14·6	4·2	2·5	2·9	5·4	5·2	6·1	7·3
Machinery and metals	4·3	2·9	1·8	1·2	1·9	5·9	3·6	8·5	4·0
Printing	3·9	2·3	2·1	4·2	4·1	3·5	5·3	4·0	6·0
Watches, instruments, &c.	1·3	0·5	1·2						
Furs and leather....	1·9	1·1	0·9						
Silk weaving	0·1	1·0	—						
Sundry	3·8	3·0	1·7						
Dress	7·9	9·9	4·6	18·2	9·4	1·3	5·3	2·3	6·6
Food preparation	1·6	2·0	1·0	6·6	4·4	1·9	4·4	1·5	2·4
	44·9	41·7	24·7	34·5	25·1	22·2	29·4	29·9	32·0
Other occupations	55·1	58·3	75·3	65·5	74·9	77·8	70·6	70·1	68·0
	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0

I have already drawn attention to the peculiarities of Hackney as compared to the rest of the district. In Hackney I estimate that 22 per cent. of the population live in unscheduled houses. In the other districts also houses are to be found above the value at which the School Board usually draws the line, but they are scattered, and the visitors usually knew enough of the inmates to enable us to schedule; but in Hackney there are whole districts as to which the visitors have not even the names of the streets in their books. The estimated number of residents in these unscheduled houses I have placed in Class H, to which they undoubtedly belong, excepting that the servants (also an estimated number) appear under Class E, from which they are mostly drawn. It is only by comparison with East London that Hackney appears peculiar; as regards the whole of London, it may be more representative than any district I have reviewed.

V.—*The Classes.*

A, *The Lowest Class*, I put at nearly 11,000, or 1¼ per cent. of the population, but it must be clearly understood that these people are beyond enumeration, and mostly outside of the School Board visitors' books. I described this class in my last paper, and I need not repeat the description here.[2]

---

[2] In a very remarkable and sensational article on "London's Suffering "Millions," which went the round of the world, and came to me from both California and New Zealand, my description of this class is quoted as applying to

B, *Casual Earnings*, very poor, add up almost exactly to 100,000, or 11¼ per cent. of the whole population. I beg that I may not be quoted as asserting that there are 100,000 *men* of this class. The numbers in great poverty are serious enough, without a resort to this most common form of mis-statement. Widows or deserted women and their families bring a large contingent to this class, which may perhaps be divided as under:—

Married men	17,000
Their wives	17,000
Unmarried men	7,000
Widows	6,500
Unmarried women	5,000
Young persons, 15—20	9,500
Children	38,000
	100,000

C, *Intermittent Earnings*, poor, are 74,247, or 8⅓ per cent. of the whole population.

D, *Small Regular Earnings*, poor, are 128,887, or nearly 14½ per cent. of the population. It must not be understood that the whole of these have quite regular work; but only that the earnings are constant enough to be treated as a regular income, which is not the case with the earnings of Class C. Of D and C together we have 203,134, and if we divide this number equally to represent those whose earnings are regular and irregular, which would be to place the standard of regularity a little higher than has been done in this inquiry, we should have equal numbers of each grade of poverty—100,000 of B or casual, 100,000 of C or intermittent, and 100,000 of D or regular earnings, out of a total population of 900,000, or one-ninth of each grade.

E, *Regular Standard Earnings*, above the line of poverty, are 376,953, or over 42 per cent. of the population.

F, *Higher Class Labour*, and best paid portions of the artisans, together with others of equal means and position from other sections, amount to 121,240, or about 13½ per cent. Tables showing the formation of Classes B, C and D, and E and F follow:—

---

the whole of Class B as well as Class A, applying that is to 13 per cent. in place of 1¼ per cent. of Tower Hamlets.

Table showing the Formation of Class B from the various Sections.

District.	Labour.			Artisans.			Other Wage Earners.	Home Industries.	Street Sellers, &c.	Ill and no Occupation.	Female Heads of Families, with Young Persons and Children.	Total.
	Casual.	Irregular.	Regular.	Building and Furniture.	Machinery and Sundry.	Dress and Food.						
Sections	2.	3.	4 and 5.	7 and 8.	9 and 10.	11 and 12.	13—18. 28 and 29.	19 and 20.	22—24 and 27.	31.	33—35 and 37.	
Shoreditch	3,182	504	70	1,696	778	946	386	258	330	211	2,112	10,473
Bethnal Green..	5,680	638	231	3,542	1,438	2,190	395	687	1,748	284	2,172	19,005
Whitechapel	2,939	192	90	183	97	1,007	179	53	349	351	575	6,015
St. George's	4,226	182	23	132	122	750	120	10	243	71	802	6,681
Stepney	6,546	378	213	331	249	181	180	71	155	71	698	9,068
Mile End	3,113	575	99	638	254	157	308	117	298	208	1,079	6,846
Poplar	12,475	1,130	822	1,827	693	449	632	153	260	520	1,738	20,199
Hackney	3,146	942	448	2,487	873	1,414	1,040	524	649	328	2,125	13,976
Total	41,307	4,541	1,496	10,836	4,504	7,094	3,240	1,873	4,032	2,044	11,296	92,263
Female adults, not heads of families, variously employed												7,799
Total of Class B (very poor)												100,062

Table showing the Formation of Classes C and D from the various Sections.

District.	Labour.			Artisans.			Other Wage Earners.	Home Industries.	Street Sellers, Small Shops, &c.	Ill and no Occupation.	Female Heads of Families, with Young Persons and Children.	Total.
	Casual.	Irregular.	Regular.	Building and Furniture.	Machinery and Sundry.	Dress and Food.						
Sections	2.	3.	4 and 5.	7 and 8.	9 and 10.	11 and 12.	13—18. 28 and 29.	19 and 20.	22—24. 26 and 27	31.	33—35. 37 and 38.	
Shoreditch	132	2,061	5,844	8,003	4,679	4,511	3,024	1,128	1,421	71	2,240	33,114
Bethnal Green..	180	2,050	5,566	7,954	3,466	5,491	1,991	1,317	2,499	43	2,043	32,600
Whitechapel	90	1,184	2,896	865	948	6,652	919	433	2,823	50	1,259	18,119
St. George's	69	2,562	3,500	666	751	3,188	1,122	399	838	78	1,069	14,242
Stepney	210	1,436	4,952	1,095	940	465	893	394	574	79	943	11,981
Mile End	100	1,623	5,595	2,320	1,263	2,091	1,823	444	1,330	71	1,993	18,653
Poplar	400	2,823	15,741	5,472	3,125	1,620	2,238	480	1,171	183	2,038	35,291
Hackney	17	1,536	5,322	4,323	2,028	2,913	2,944	894	1,245	86	1,740	23,048
Total	1,198	15,275	49,416	30,698	17,200	26,931	14,954	5,489	11,901	661	13,325	187,048
Female adults, not heads of families, variously employed..........												16,086
Total of poor..........												203,134

Table showing the Formation of Classes E and F from the various Sections.

District.	Labour.			Artisans.			Other Wage Earners.	Home Industries.	Street Sellers, Small Shops, and Coffee Houses.	Large Shops and Licensed Houses.	Professional and Independent.	Ill and no Occupation.	Female Heads of Families, &c.	Total.
	Irregular.	Regular.	Foremen, &c.	Building and Furniture.	Machinery and Sundry.	Dress and Food.								
Sections	3.	4 and 5.	6.	7 and 8.	9 and 10.	11 & 12.	13—18. 28 and 29.	19 & 20.	22—24. 26.	25 and 27.	30 and 32.	31.	33—38.	
Shoreditch	9	7,033	677	14,662	12,942	6,052	11,541	4,455	3,654	873	133	18	772	62,821
Bethnal Green..	77	8,307	1,042	12,706	8,841	7,525	9,711	5,769	4,676	1,209	86	34	866	60,849
Whitechapel	86	5,264	611	2,122	2,880	10,581	4,363	3,786	5,630	676	47	41	655	36,742
St. George's	57	6,102	1,492	1,748	1,992	2,617	2,863	1,667	2,175	419	81	26	292	21,481
Stepney	258	6,927	3,046	4,495	4,672	1,338	6,203	1,364	2,164	503	116	27	628	31,741
Mile End	200	11,144	2,636	8,915	8,304	8,526	15,740	3,717	5,327	1,031	332	18	1,383	67,273
Poplar	585	13,835	6,317	15,174	16,882	4,180	23,873	2,520	4,986	1,007	402	44	2,021	91,826
Hackney	77	7,274	1,564	14,041	11,095	5,912	24,418	5,479	4,225	985	463	17	1,799	77,349
Total	1,349	65,886	17,385	73,863	67,608	46,731	98,712	28,757	32,837	6,703	1,610	225	8,416	450,082
									Female adults					48,111
									Total of E and F					498,193

G, *Lower Middle Class*, are 34,392, or nearly 4 per cent.

H, *Upper Middle Class*, are 44,779, or 5 per cent. The large proportion of the upper, as compared to the lower middle class, is entirely due to Hackney. For East London proper the figures are 32,205 for G, as against 12,387 for H.

Grouping these classes together, A, B, C and D are the classes of poverty sinking to want, and add up to 314,175, or 35 per cent. of the population, while E, F, G and H are the classes in comfort rising to affluence, and add up to 577,364, or 65 per cent. of the population.

Separating East London from Hackney, the same system of grouping gives us for East London 269,361, or 38 per cent. in poverty, against 439,314, or 62 per cent. in comfort, and for Hackney by itself 43,257, or 24 per cent. in poverty, against 139,607, or 76 in comfort.

The most poverty-stricken district (St. George's) has 23,246, or 49 per cent. in poverty, against 24,332, or 51 per cent. in comfort. It will be noted that this is also the smallest district, and it is possible that an equally large area not less poor might be found by dividing one of the larger districts.

VI.—*The Question of Poverty.*

Omitting Class A, which rather involves the question of disorder, we have Classes B, C and D as containing the true problem of poverty. I propose to study some aspects of this problem.

In the table which follows I divide the population approximately, according to age, sex, &c., in each of these classes:—

	Very Poor.	Poor.		Total.
	B.	C.	D.	
Married men	16,705	12,822	23,110	52,637
Their wives	16,682	12,760	22,990	52,432
Unmarried men	7,195	5,505	9,955	22,655
Widows	6,495	4,119	5,776	16,390
Unmarried women	5,191	3,986	6,749	15,926
Young persons, male	4,812	3,565	6,164	14,541
" female	4,623	3,363	5,833	13,819
Children	29,000	20,880	36,032	85,912
Infants	9,359	7,247	12,278	28,884
	100,062	74,247	128,887	303,196

Of this large total (303,196), I should say that the 100,000 of "very poor" are at all times more or less "in want." They are ill-nourished and poorly clad. But of them only a percentage, and not I think a large percentage, would be said by themselves, or by any one else, to be in "in distress." From day to day and from hand to mouth they get along; sometimes suffering, sometimes helped, but not always unfortunate, and very ready to enjoy any good luck that may come in their way. They are, very likely, mostly improvident, spending what they make as they make it; but it has been truly said, "the improvidence of the poor has its "bright side. Life would indeed be intolerable were they always "contemplating the gulf of destitution on whose brink they "hang."[3] Such are the very poor. Some may be semi-paupers, going into the "house" at certain seasons, and some few receive out-door relief, but on the whole they manage to avoid the workhouse. On the other hand, the 200,000 of "poor," though they would be much the better for more of everything, are not "in "want." They are neither ill-nourished nor ill-clad, according to any standard that can reasonably be used. Their lives are an unending struggle, and lack comfort, but I do not know that they lack happiness.

It will be seen that just as I draw a distinction between the "poor" and "very poor," so I draw one also between Poverty, Want, and Distress. Want, as I use the word, is an aggravated form of Poverty, and Distress an aggravated form of Want. The distinction is relative: I recognise a degree of poverty that does not amount to want, and a degree of want that does not amount to distress.

In order to try to throw some definite light on the terms of this struggle, and on the causes of destitution, I have attempted to analyse 4,000 cases, being the "poor" and "very poor" known to selected School Board visitors in each district. I chose those visitors who had most knowledge of the poorest classes, and asked each of them to note opposite each case the proximate cause of poverty or destitution, and I give the results below. I have attempted no verification of this information. It would not have been practicable or even admissible to have done so, and the analysis must be taken for what it is worth. I have confidence in the *bona fides* with which the return has been made, and I trust that any bias—any leaning towards this or that cause, such as towards drink in the mind of one visitor, or towards improvidence in the mind of another, or conditions of employment in a third, or too many children in a fourth; I trust that any such bias may be corrected by taking the returns from the nine visitors together, as I have done:—

---

[3] "A Village Tragedy," by Mrs. Woods.

Analysis of Causes of "Great Poverty" (Classes A and B).

		Per Cent.		Per Cent.	
1. Loafers	—	—	60	4	
2. Casual work	697	43	878	55	Questions of employment
3. Irregular work, low pay	141	9			
4. Small profits	40	3			
5. Drink (husband, or both husband and wife)	152	9	231	14	Questions of habit
6. Drunken or thriftless wife	79	5			
7. Illness or infirmity	170	10	441	27	Questions of circumstance
8. Large family	124	8			
9. Illness or large family, combined with irregular work	147	9			
	—	—	1,610	100	

It will be seen that out of 1,600 heads of families, 60 are admitted loafers—those who will not work. After these come 878 whose poverty is due to the casual or irregular character of their employment, combined more or less with low pay; then 231 whose poverty is the result of drink or obvious want of thrift, and finally 441 more, who have been impoverished by illness, or the large number of those who have to be supported out of the earnings.

Analysis of Causes of "Poverty" (Classes C and D).

		Per Cent.		Per Cent.	
1. Loafers	—	—	—	—	
2. Low pay (regular earnings)	503	20	1,668	68	Questions of employment
3. Irregular earnings	1,052	43			
4. Small profits	113	5			
5. Drink (husband, or both husband and wife)	167	7	322	13	Questions of habit
6. Drunken or thriftless wife	155	6			
7. Illness or infirmity	123	5	476	19	Questions of circumstance
8. Large family	223	9			
9. Illness or large family, combined with irregular work	130	5			
	—	—	2,466	100	

No loafers are counted here. The amount of loafing that brings a man's family down part way to destitution is not very noticeable, or may perhaps pass as irregular employment. Such men live on their wives.

It may be observed that the proportion of Classes C and D who owe their poverty to questions of employment is greater, while that of those owing it to questions of circumstance is less, than with the very poor, while drink accounts for about the same proportion in both tables. In the case of very poor, low pay and casual or irregular work are combined, and account for 55 per cent. With the "poor" these causes can be separated, and we have 43 per cent. whose poverty is traced to the irregularity of their work, and 25 per cent. whose poverty is traced to their low pay.

Neither table takes any account of incapacity for work, except so far as consequent on illness. But incapacity is no doubt common of both sorts: that which leads especially to low pay and that which leads especially to irregularity of employment. There are those who never learn to do anything well on the one hand, and those who cannot get up in the morning on the other; those who are slow, taking two or three hours to do what another man will do in one; and those who are too restless to keep any employment long; those who are trained or suited only for some employment for which there is a fitful demand, or no demand at all; those who, without being counted as ill, or infirm, or disabled, are yet incapacitated for profitable work by bad sight, or failing nerves, or deficient strength; and lastly there is every degree of weakness of intellect.

I wish it were possible for me to break up the mass of those who owe their poverty to questions of employment, and to show what is their economic value compared to that of the better paid and regularly employed working people of Class E, for it is essential to have such evidence before any hopeful attempt to deal with the question of the unemployed can be made. It must be remembered that it is the men who figure in my tables as irregularly employed, who also may be, and are, counted as the "unemployed." At the very time when the Government house-to-house inquiry was made into the numbers of those out of work in St. George's-in-the-East, I was scheduling in the same district, and I made special inquiries from the School Board visitors, who had themselves only just completed their schedules for the year, and I was astonished at the very small number of heads of families returned by them as out of work. It may be that men with school children are in more settled employment than those without, but after making every allowance, it seems clear that, with regard to that inquiry, to be out of work must be taken as meaning to be irregularly or casually employed.

Although I have thought it best to merge all the returns together, I may remark that drink figures as the cause of poverty to a much greater extent everywhere else than in Whitechapel, where it only accounts for 4 per cent. of the very poor, and 1 per cent. of the poor. This is no doubt to be explained by the Jewish population, who, whatever their faults may be, are very sober. To those who look upon drink as the source of all evil, the position it here holds as accounting for only 14 per cent. of the poverty in the East End, may seem altogether insufficient; but I will remind them that it is only as principal cause that it is here considered; as contributory cause it would no doubt be connected with a much larger proportion. Nor am I inclined to generalise very confidently from an analysis of this sort, untested and unsupported by other evidence. Possibly the attempt made here may induce others to follow up this portion of my inquiry. The Charity Organisation Society and the Society for the Relief of Distress could supply information with regard to the causes of poverty in such cases as come before them, but I may point out that my figures have, as general evidence, this advantage over those of any relief society, that the cases they deal with are representatives of all the poor in the districts from which they are drawn, and not only of those who apply for relief. On the other hand, the information of the societies about their cases would be far more detailed than mine can pretend to be.

The very large proportion of both poor and very poor who are continually short of work suggests various considerations. When they do not work, what do they do? What use do they make of their unoccupied time? Organisation of work needs to be supplemented by organisation of leisure, if the whole field is to be covered. In this direction employers would not find their interests opposed to those of labour; but the movement must come from the men themselves, and here we meet the usual difficulty. The present system suits the character of the men. They suit it and it suits them, and it is impossible to say where this vicious circle begins. It has been suggested by Mr. Auberon Herbert, that adult educational classes might be used in this direction—used, that is, in connection with some systematic treatment of want of work. As it now is the men claim that their time is occupied, or at least made otherwise useless, by the search after work; that they need to be always on hand or they may miss some chance. This plan is fraught with evil, the public-house being the rendezvous of the unemployed, and seems a needless aggravation of competition. It might be replaced with great advantage by some system which, while making some use of the idle days, kept the men within call. I should like to see co-operation directed towards this, or the clubs might undertake it. It is strange if no value for themselves or each other can be obtained from the combined efforts of the partially employed in their leisure hours.

Industry will not work without some unemployed margin—some reserve of labour—but the margin in London to-day seems to be exaggerated in every department, and enormously so in the lowest class of labour. Some employers seem to think that this state of things is in their interest—this argument has been used by dock officials—but this view appears to me shortsighted, for labour deteriorates under casual employment more than its price falls. I believe it to be to the interest of every employer to have as many regularly employed servants as possible, but this is still more to the interest of the community, and most of all to that of the employed. I should therefore wish to appeal to all employers to make some effort in this direction, as well as giving to such of the partially employed as will avail themselves of it, the chance to make some good use of their leisure time. To divide a little work amongst a number of men—giving all a share—may seem kindness and even justice, and I have known that course to be taken with this idea. It can only be a wise policy as a temporary expedient, otherwise it only serves to prolong a bad state of things.

If leisure were organised, we should at least know the extent of the want of employment, and we might also learn something definite about the effect of seasons of work: learn to what extent the dovetailing of employments is practicable or is effected, or to what extent work for the slack season may be arranged in the trade itself, and now is arranged, by those employers who think it well to keep their workpeople together. Further, there is, with regard to female industries, the question of work which never pretends to be other than the employment of leisure time. If the higher organisation of industry brought it about that a value were found in the entire service and undivided energies of the worker, not to be found in desultory work (analogous to the distinction between professional and amateur), it should follow, as to women's work, that a division would be made between those who earn their living and those who only help to do so, or work for pocket money. Such a value ought to exist. In connection with great skill, I believe it does exist to a very marked extent, and is reflected in the extraordinary range observable in women's wages. The same argument applies more or less to all industry. Some suppose that the introduction of machinery tends in an opposite direction, imagining that all men are equal before the machine, but this is a mistake. Machinery may tend to accentuate the difference between skilled and unskilled labour, but the machine hand is always a skilled worker, not lightly to be discharged, and the regularity of his employment carries with it that of the unskilled hands. The value of the machine itself tends in the same direction. It is where machinery is most used that employment is most constant, and where it is least used that it is most precarious. The higher organisation of industry tends against every cause of irregularity of employment.

However it is to be explained, the fact remains that neither Class B nor Class C work much more than half their time, and that there is no month in the year, taking the people together, when this is not so. It is also a fact that most of the work done by Class B is inefficiently done, both badly and slowly. It may not be too much to say that if the whole of Class B were swept out of existence, all the work they do could be done, together with their own work, by the men, women and children of Classes C and D: that all they earn and all they spend might be earned and could very easily be spent by the classes above them; that these classes, and especially Class C, would be immensely better off, while no class, nor any industry, would suffer in the least. This view of the subject serves to show who it is that really bear the burden. To the rich the very poor are a sentimental interest: to the poor they are a crushing load. The poverty of the poor is mainly the result of the competition of the very poor. The entire removal of this class out of the daily struggle for existence I believe to be the only solution of the problem of poverty. Is this solution beyond our reach?

If it is true, as we are taught and as I believe, that the standard of life is rising, and that the proportion of the population in very poor circumstances never has been less, and is steadily decreasing, it follows, as I think, that some day the individualist community, on which we build our faith, will find itself obliged for its own sake to take charge of the lives of those who, from whatever cause, are incapable of independent existence up to the required standard, and will be fully able to do so. Has this time come yet?

I shall not now attempt to answer these questions. I will only point out some of the economical disadvantages of the present plan. In spite of the poor way in which all, and the miserable way in which many, of these people live, they do not keep themselves; and in spite of the little pay they get I believe no work is so dear as that which they do. Indeed it must be so, or else they would have more work given them. Those who obtain better wages and more regular employment receive only in proportion to what they give and are more profitable servants.

Beyond the malific influence which the imperative needs and ill-regulated lives of the class we are considering exercise over the fortunes of those who might otherwise do well enough, and beyond the fact that they do not support themselves, but absorb the charities of both rich and poor, they are also a constant burthen to the State. What they contribute, whether in taxes or rates, is little compared to the expense they cause. Their presence in our cities creates a costly and often unavailing struggle to raise the standard of life and health.

It will be seen that it is not exactly in the interests of the very poor themselves that I speak. However slowly and kindly it may be done, it is not a pleasant process to be improved off the face of the earth, and this is the road along which we have as I think to travel. I do not venture to make any definite proposals; I only say that it seems time that we should find some means to carry voluntarily on our shoulders the burthen which otherwise we have to carry involuntarily round our necks.

VII.—*A Comparison of the East End with the rest of London.*

(1.) *Poverty.*—A sort of rivalry has recently sprung up between South London and East London. South London asks that it also shall have its Toynbee Hall, its Oxford House, and its People's Palace. There are even those who dispute the title of East London to the throne of poverty, and wherever there are poor in London some jealousy is felt of the extent to which charitable effort turns eastward.

In view of this I have attempted to forecast, even if very roughly, the results which such an inquiry as this might disclose with regard to the numbers of poor and very poor if applied to the rest of London. I give below tables with the following particulars for each district in London:—

(1.) Population in 1881.
(2.) Number of persons to an acre.
(3.) Number of inhabited houses to an acre.
(4.) Number of persons to an inhabited house.
(5.) Average rateable value of property per house.
(6.) Average rateable value of property per person.

From these facts, combined with the information obtained as to the eight districts covered by my inquiry, and supplemented by such general information as was available, I have estimated the percentage of poverty which may be supposed to exist in all parts of London.

The principal test adopted is that of the number of persons to an acre, my argument being that, on the whole, the poorer people are the more tightly they are packed. I, of course, do not expect to find an absolute relation—to find, for instance, that the poverty in Whitechapel is to that in Greenwich as the numbers per acre in Whitechapel are to the numbers in Greenwich—far from it. I merely say that, with certain allowances, and taken in connection with other known facts, the order of crowding will help us to state the order of poverty.

To arrive at the acreage for this purpose I have, so far as possible, excluded ground not occupied residentially, whether standing as an open space or filled by large business premises, and in Appendix B I give the acreage according to the census, with the particulars of the deductions in each district. I have been obliged to take the figures of 1881 for the population, as none later are available.

The idea of an inner and outer ring, which I have used in describing East London, will also be found useful in the present comparison, and I have stated the figures in this way as well as according to the order of poverty :—

Tables of Poverty. (1.) *By Sequence of Poverty.*

Per Cent. of Poor.	District.	Population in 1881.	Persons to an Acre.	Inhabited Houses to an Acre.	Persons to an Inhabited House.	Rateable Value of Property per House.	Rateable Value of Property per Person.
						£	£
45	Bethnal Green	126,961	195	23	7·6	22	2·9
43	St. George's and Whitechapel	118,520	227	26	8·9	43	4·8
40	Shoreditch	126,591	207	25	8·4	39	4·6
40	Part of Lambeth {Lambeth Church & Waterloo Road sub-districts}	91,281	191	22	7·1*	37*	5·1*
37	St. Saviour's	195,164	177	22	8·6	39	4·9
36	Poplar	156,510	125	17	7·7	33	4·4
35	Holborn	151,835	193	19	10·0	59	5·9
35	St. Olave	134,632	131	17	7·7	45	5·8
30	Mile End and Stepney	164,156	165	22	7·4	30	4·0
30	St. Giles's, Westminster (Soho and St. James's), and Strand	125,518	175	16	10·9	162	14·5
30	Greenwich	131,233	62	10	6·6	32	4·8
25	Pancras	236,258	131	14	9·6	59	6·2
25	Camberwell	186,593	58	9	6·8	31	4·5
25	Wandsworth	210,434	36	5	7·1	45	5·9
25	Lewisham	73,327	20	3	6·2	48	7·6
23	Hackney	186,462	66	10	6·8	36	5·2
20	Islington	282,865	102	12	8·6	43	5·3
20	Woolwich	80,845	20	3	6·9	30	4·5
15	Fulham	114,839	57	8	7·0	34	4·9
15	Chelsea	88,128	118	15	7·9	43	5·4
15	St. George's, Hanover Square	149,748	114	13	8·4	132	15·8
15	Remainder of Lambeth	162,418	53	8	7·1*	37*	5·1*
10	Marylebone and Hampstead	200,362	68	7	9·1	83	9·1
10	Paddington	107,218	107	13	8·1	91	11·2
10	City of London	51,439	85	11	7·8	380	69·4
5	Kensington	163,151	90	11	8·1	83	10·2
25	Total population	3,816,483	78	10	7·8	57	7·3

* These figures are for the whole of Lambeth, there being no means available of dividing them.

Tables of Poverty. (2.) *By Groups of Districts.*

	District.	Population in 1881.	Persons to an Acre.	Inhabited Houses to an Acre.	Persons to an Inhabited House.	Rateable Value of Property per House.	Rateable Value of Property per Person.	Per Cent. of Poor.
						£	£	
Inner Ring North of Thames	Mile End and Stepney	164,156	165	22	7·4	30	4·0	30
	St. George's and Whitechapel	118,520	227	26	8·9	43	4·8	43
	Bethnal Green	126,961	195	23	7·6	22	2·9	45
	Shoreditch	126,591	207	25	8·4	39	4·6	40
	Holborn	151,835	193	19	10·0	59	5·9	35
	St. Giles, Westminster (Soho and St. James's) and Strand	125,513	175	16	10·9	162	14·5	30
Inner Ring South of Thames	Part of Lambeth (Lambeth Church and Waterloo Rd. sub-districts)	91,281	191	22	7·1*	37*	5·1*	40
	St. Saviour's	195,164	177	22	8·6	39	4·9	37
	St. Olave	134,632	131	17	7·7	45	5·8	35
Outer Ring North of Thames	Poplar	156,510	125	17	7·7	33	4·4	36
	Hackney	186,462	66	10	6·8	36	5·2	23
	Islington	282,865	102	12	8·6	43	5·3	20
	Pancras	236,258	131	14	9·6	59	6·2	25
	Marylebone and Hampstead	200,362	68	7	9·1	83	9·1	10
	Paddington	107,218	107	13	8·1	91	11·2	10
	Kensington	163,151	90	11	8·1	83	10·2	5
	Fulham	114,839	57	8	7·0	34	4·9	15
	Chelsea	88,128	118	15	7·9	43	5·4	15
	St. George's, Hanover Square	149,748	114	13	8·4	132	15·8	15
Outer Ring South of Thames	Greenwich	131,233	62	10	6·6	32	4·8	30
	Camberwell	186,593	58	9	6·8	31	4·5	25
	Remainder of Lambeth	162,418	53	8	7·1*	37*	5·1*	15
	Wandsworth	210,434	36	5	7·1	45	5·9	25
	Lewisham	73,327	20	3	6·2	48	7·6	25
	Woolwich	80,845	20	3	6·9	30	4·5	20
	City of London	51,439	85	11	7·8	380	69·4	10
	Total population	3,816,483	78	10	7·8	57	7·3	25

* See note to previous table.

I am content to let these tables speak for themselves. There is room for much difference of opinion, and I shall be glad of criticism, both on the method employed and on the results obtained, in the hope that where my comparisons are wrong they may be corrected.

Taking the order of poverty, it will be seen that Bethnal Green stands first. It is not the most crowded district in London in the sense of having either so many inhabitants or quite so many houses to the acre as are to be found elsewhere, but the houses are small, rarely more than two storeys high, and if the number of inhabitants per room could be given, this district would probably head the list. The small size of the houses is strongly reflected in the low rateable value of the property, this being less than 3*l.* per head. I will, however, say here that the figures of rating value must be used with caution, as I have not been able to limit them to residential property, as ought to be done for a proper comparison; and the low value for Bethnal Green is partly due to the absence of the docks, railways, factories, warehouses, or great shops which raise the total value elsewhere.

St. George's-in-the-East, taken by itself, is poorer than Bethnal Green, containing 249 persons and 31 houses to the acre, with 8·2 persons to the house, and a low rateable value; but it is too small to stand alone without a misleading effect, and in the above tables has been joined to Whitechapel, with which it is practically one district. Together they hold the second place in poverty, with 227 persons and 26 houses to the acre, and 8·9 persons to the house on the average.

Shoreditch stands third, with 207 persons and 25 houses to the acre, and 8·4 persons to the house.

Fourth on the list comes the inner part of Lambeth, which I have separated from the outlying district, and which shows 191 persons and 22 houses to the acre. This is followed by St. Saviour's, Southwark, with 177 persons and 22 houses to the acre, and 8·6 persons to the house. It is these districts which are said by some to be no less poor than the river side and inner ring to the east of the City, but I hardly think it is so. I give to the river side of Lambeth 40 per cent. of poverty, to St. Saviour's 37 per cent., and to St. Olave's, with 131 persons and 17 houses to the acre, 35 per cent., the degree of poverty becoming less in this instance as we go eastward. St. Saviour's itself must be compared to St. George's and Whitechapel, and would be equally poor were it not for the better class district of Newington, &c., which probably compares with Mile End, and would reduce the average considerably.

I make St. Olave's a little less poor than Poplar, although the figures compare very closely, the former having 131 persons and 17 houses to the acre, and 7·7 persons to the house, whilst Poplar has 125 persons and 16 houses to the acre, and 7·7 persons to a house. Poplar has 36 per cent. of poverty. This percentage seems high for a district on the outer ring, but there is, at least at the East End of London, a centrifugal as well as centripetal tendency among the poorest classes, and there are large numbers of very poor people to be found living in the Isle of Dogs and in the ill-built outskirts by Bromley and Bow.

We now return to the inner ring on the north side of the river at Holborn. This district adjoins Shoreditch, and includes Clerkenwell and St. Luke's; it has 193 inhabitants to the acre, and thus might be supposed to be poorer than St. Saviour's, Southwark, with its 177 persons, but with Holborn we enter upon a different class of houses compared to those in East or South London, and perhaps a different style of life. This is shown by there being only 19 houses to the acre, and as many as 10 residents to the house, while in St. Giles's the figures stand at 18 houses to the acre, and 11·5 inhabitants to the house. We also note that the rateable value of the property per person, which is 2*l.* 18*s.* in Bethnal Green, and 4*l.* 12*s.* in Shoreditch, comes to be 5*l.* 18*s.* in Holborn, and 7*l.* 18*s.* in St. Giles's. The houses are of three or four storeys, and their occupants are thus really less crowded, and, I have no doubt, the people are less poor as we go westward. When I say "less poor," I do not mean that the existing poverty is less acute, but only that the poor bear a smaller proportion to the rest of the population. Acting on this view, I put the probable percentage of poverty at 35 per cent. for Holborn, making this district as much better off than Shoreditch as Shoreditch is than Bethnal Green.

Next to Holborn, on both lists, comes the combined district of St. Giles's, with Soho and St. James's (called Westminster by the Registrar-General), and the Strand. This composite district, with 125,000 inhabitants, has 175 persons and 16 houses to the acre, and 10·9 persons to the house. It is undoubtedly less poor than Holborn, and I have put it at 30 per cent., but this may be too much. No district would better repay separate investigation than St. Giles's, and the results would throw light on the sort of crowding and poverty which prevail in the neighbourhood of, and in connection with, the great retail shops and of the theatres.

The joint district of Mile End and Stepney, which I include in the inner ring, stands also at 30 per cent. of poverty. By my figures Stepney alone has 38 per cent., and Mile End alone has 26 per cent.; the two, however, may be fairly combined as one district. In this district there are 165 persons and 22 houses to the acre, and 7·4 persons to the house. These figures afford a useful comparison if looked at with those of St. Saviour's, Southwark.

The other percentages are mainly deduced from the figures for Hackney, but the districts are very different in character, and the base is too small for the superstructure. I have tried to make use of the figures of pauperism to assist me in this classification, and I append a table (Appendix C) showing the proportion of in-door and out-door relief to the population in each registration district; but this weapon turns in my hand, and seems rather to reflect the differences of poor law administration, than the relative amount of poverty. Nor must it be forgotten that my definition of poverty goes much beyond the needs of relief, including as it does all the independent poor. There is not in my tables any constant relation between the numbers of Classes C and D, the strictly independent poor, and those of Class B. Nor have I discovered any explanation of the exaggeration, where it occurs, of the numbers in Class B. In Shoreditch, Whitechapel, and Mile End, Class B are only one-fourth, but in Bethnal Green, Hackney, and Stepney they are about half, the average all round being one third. The relations of pauper relief to the total numbers of the poor seem to be not less erratic. The subject is one of great interest, and would bear further investigation.

Taking the estimated percentages of poverty as given in the tables, and the population of 1881, we get a total of 963,943 poor in London, or, with the population of to-day as our basis, rather more than 1,000,000. This number does not include in-door paupers or other inmates of institutions.

If the proportions of Classes A, B, C, and D amongst themselves are similar in all London to what I make them in the East End, we get in round figures the following division of a population of 4,000,000, again excluding in-door paupers, &c.:—

A (loafing)	50,000	Classes in poverty sinking to want
B (casual earnings)	300,000	
C (irregular ,,)	250,000	
D (regular ,, low pay)	400,000	
E (,, standard earnings)	3,000,000	,, comfort rising to wealth
F (higher class labour)		
G (lower middle class)		
H (upper ,,)		
Total	4,000,000	

It must be borne in mind that Class A, besides being very difficult of definition, hardly fall within the scope of my inquiry. All I can say positively is that they bear a very small proportion to the rest of the population, or even to Class B, with which they are mostly mixed up. The hordes of barbarians of whom we have heard, who, coming forth from their slums, will one day overwhelm modern civilisation, do not exist. The barbarians are a handful, a very small and decreasing percentage.

I am very glad to be able to say that an inquiry similar to this of mine will shortly be made in central London (Soho, St. Giles, &c.), and I hope the example may be followed in other parts of London, so far as may be needed to make possible a broad picture of the whole metropolis.

I am also able to announce that Mr. Frederick Scott, of the Manchester Statistical Society, has undertaken to make a similar inquiry in Manchester and Salford, which he hopes to complete this year. At Leeds also the matter is under consideration, and I hope other provincial towns may follow suit.

(2.) *Industry.*—The place that the East End occupies in the industrial constitution of London I shall try to show by the following table, which at the same time and in the same way expresses the place which London occupies compared to the whole of England. It is a statement by numbers and percentages of the occupations of the people, arranged on the system adopted in a former paper read by me before this Society :

Table of Occupations.

	East London and Hackney.				Remainder	
	Total.		Percentage.		Total.	
Agriculture	—	2,971	—	0·8	—	19,229
Fishing	—	29	—	—	—	171
Mining	—	623	—	0·2	—	3,377
Building	—	24,117	—	6·3	—	117,283
Manufacture—						
Machinery and tools	5,707		1·5		16,793	
Ship building	3,684		1·0		2,216	
Metal workers	9,722		2·6		26,078	
Earthenware, &c.	905		0·2		3,395	
Fuel, gas, and chemicals	2,833		0·7		5,567	
Furs, leather, glue, &c.	6,748		1·8		14,252	
Wood, furniture, and carriages	22,800		6·1		40,000	
Paper, floorcloth, and waterproof	4,443		1·2		6,957	
Textiles and dyeing	9,570		2·5		15,630	
Dress	57,885		15·2		130,915	
Food, drink, and smoking	9,838		2·6		25,162	
Watches, instruments, and toys	2,830		0·7		13,970	
Printing and bookbinding	9,195		2·4		33,005	
Unspecified	9,005		2·3		16,795	
Total of Manufacture		155,165		40·8		350,735
Transport—						
Navigation and docks	31,740		8·4		55,660	
Railways	3,488		0·9		18,512	
Roads	10,931		2·9		37,869	
Total of Transport		46,159		12·2		112,041
Dealing		45,874		12·1		154,526
Industrial Service—						
Commercial	14,094		8·7		55,006	
General labour	20,559		5·4		57,541	
Total of Industrial Service		34,653		9·1		112,547
Total of Industry		309,591		81·5		869,909
Administration	4,524		1·2		18,876	
Army and Navy	1,188		0·3		15,312	
Police and Prisons	1,520		0·4		8,480	
Law	1,436		0·4		13,764	
Medicine	3,612		1·0		22,688	
Art and Amusement	2,613		0·7		16,687	
Literature and Science	384		0·1		3,216	
Education	4,239		1·1		22,161	
Religion	1,311		0·3		5,989	
Total of Public and Professional Service		20,827		5·5		127,173
Domestic Service		49,507		13·0		333,193
		379,925		100·0		1,330,275

Table of Occupations.

of London.		Whole of London.				England and Wales.			
Percentage.		Total.		Percentage.		Total.		Percentage.	
—	1·5		22,200	—	1·3	—	1,341,000	—	12·0
—	—		200	—	—	—	30,000	—	0·3
—	0·2		4,000	—	0·2	—	562,000	—	5·0
—	8·8		141,400	—	8·3	—	796,000	—	7·1
1·3		22,500		1·3		224,000		2·0	
0·2		5,900		0·3		54,000		0·5	
1·9		35,800		2·1		477,000		4·3	
0·3		4,300		0·2		72,000		0·6	
0·4		8,400		0·5		48,000		0·4	
1·1		21,000		1·2		63,000		0·6	
3·0		62,800		3·7		240,000		2·2	
0·5		11,400		0·7		48,000		0·4	
1·2		25,200		1·5		962,000		8·6	
9·8		188,800		11·0		954,000		8·5	
1·9		35,000		2·0		182,000		1·6	
1·0		16,800		1·0		45,000		0·4	
2·5		42,200		2·5		88,000		0·8	
1·3		25,800		1·5		142,000		1·3	
	26·4		505,900		29·5		3,599,000		32·2
4·2		87,400		5·1		347,000		3·1	
1·4		22,000		1·3		139,000		1·2	
2·8		48,800		2·9		168,000		1·5	
	8·5		158,200		9·3		654,000		5·8
	11·6		200,400		11·7		924,000		8·3
4·1		69,100		4·0		225,000		2·0	
4·3		78,100		4·6		560,000		5·0	
	8·4		147,200		8·6		785,000		7·0
	65·4		1,179,500		68·9		8,691,000		77·7
1·4		23,400		1·4		82,000		0·7	
1·2		16,500		1·0		124,000		1·1	
0·6		10,000		0·6		36,000		0·3	
1·0		15,200		0·8		44,000		0·4	
1·7		26,300		1·5		84,000		0·8	
1·3		19,300		1·1		47,000		0·4	
0·2		3,600		0·2		9,000		0·1	
1·7		26,400		1·7		183,000		1·6	
0·4		7,800		0·4		51,000		0·5	
	9·5		148,000		8·7		660,000		5·9
	25·1		383,700		22·4		1,838,000		16·4
	100·0		1,711,200		100·0		11,189,000		100·0

The method here adopted might with advantage be carried further, and arranged to show the ages and sexes of the workers, and the probable numbers of dependents. As it stands, one notices, comparing the East End with the whole of London, and still more markedly with the rest of London, the important position held by (1) dress, (2) furniture, &c., (3) navigation and docks. Together these employments account for 30 per cent. of the employed population, as against 20 for the whole of London, 17 per cent. for London without the East End, and 11 per cent. for all England In these trades we have on the whole a low scale of pay; they include the casual dock labourer, and all those workpeople who have recently been called "sweatees."

More generally, it is to be observed that Manufacture accounts for no less than 41 per cent. of the occupied population, as compared to 32 per cent. for all England, and 26 per cent. for London excluding the East End; Transport for 12 per cent., as compared to 8½ per cent. for the rest of London, and 6 per cent. for all England. Dealing is about 12 per cent. all over London, but is only 8 per cent. for all England. In Industrial Service (which includes general labour) the East End stands at 9 per cent., compared to 8 per cent. for the rest of London, and 7 per cent. for all England. On the other hand, Building is only 6 per cent., as compared to 9 per cent. for the rest of London, and 7 per cent. for all England; and of course Agriculture finds no place. On the whole, Industry accounts for 81 per cent. of the occupied population, as compared to 65 per cent. for the rest of London, 69 per cent. for all London, and 78 per cent. for all England. Domestic Service in East London and Hackney accounts for 13 per cent., while in the rest of London it absorbs 25 per cent., in all London 22 per cent., and in all England 16 per cent. This again may be taken as a rough test of poverty. If we exclude Hackney, Domestic Service drops to about 10 per cent., and of this a very large part is under the head of hotel and restaurant service, or accounted for by such extra outside service as is performed by barbers and sweeps. Finally, Public and Professional Service, which accounts for 9 per cent. in London at large, only occupies 5½ per cent. in East London, being, however, about the same percentage as holds good for the rest of England.

I desire to acknowledge the great courtesy and kindness with which the registrar-general placed at my disposal the unpublished occupation sheets for the districts I had under review. I only regret that my inquiry comes so long after the date of the returns as to reduce to some extent the value of the information they contain. I desire also to thank the School Board and their officers for their cordial co-operation, without which I could not have moved a step.

In conclusion I must apologise for the very fragmentary character of this paper. It not only needs to be read in connection with my paper of last May, but also with much that has yet to be written, before it can even pretend to present a full account of the condition and occupations of the people of East London. I am, however, glad to say that I have obtained some very valuable co-operation, and can now see my way to the completion of my task by the end of the present year, when I hope to gather together the various fragments in one volume.

APPENDIX A (1).—*Table of Sections*

NOTE.—The figures in these tables must

Divided into Sections according to Character of Employment of Heads of Families.

Class.	Description.	Heads of Families.	More or less Dependent.			Un-married Males over 20 and Widowers.	Total.	Percentage.	
			Wives.	Children —15.	Young Persons, 15—20.				
Males.									
Labour.... 1	Lowest class, loafers, &c.....	300	300	41	148	118	907	0·75	
2	Casual day-to-day labour....	681	681	1,347	338	267	3,314	2·73	
3	Irregular labour	538	538	1,029	258	211	2,574	2·15	
4	Regular work, low pay........	1,093	1,093	1,895	475	430	4,986	4·10	
5	„ ordinary pay	1,709	1,709	3,088	774	672	7,952	6·55	
6	Foremen and responsible work...	145	145	271	68	57	686	0·57	
Artisans 7	Building trades..................	1,788	1,788	3,268	822	703	8,369	6·90	
8	Furniture, woodwork, &c....	3,365	3,365	6,392	1,604	1,320	16,046	13·25	
9	Machinery and metals	1,095	1,095	2,033	507	431	5,161	4·25	
10	A. Printing..........................	977	977	1,845	462	385	4,646	3·86	
	B. Watches,instruments,&c.	323	323	600	150	127	1,523	1·26	
	C. Furs and leather	497	497	920	230	195	2,339	1·92	10·95
	D. Silk weaving	34	34	72	18	13	171	0·14	
	E. Sundry artisans	962	962	1,819	457	377	4,577	3·77	
11	Dress	2,012	2,012	3,815	956	789	9,584	7·91	
12	Food preparation	414	414	748	187	162	1,925	1·56	
Locomotion 13	Railway servants	147	147	274	68	58	694	0·57	
14	Road service	289	289	586	146	114	1,424	1·17	
Assistants 15	Shops and refreshment houses ...	731	731	1,301	327	287	3,377	2·78	
Other Wages 16	Police, soldiers, and sub-officials	304	304	584	146	119	1,457	1·20	
17	Seamen	17	17	26	6	7	73	0·06	
18	Other wage earners	1,159	1,159	1,482	371	454	4,625	3·83	
Manufacturers, &c. 19	Home industries (not employing)	722	722	1,388	348	283	3,463	2·86	
20	Small employers	634	634	1,308	329	249	3,154	2·60	
21	Large „	34	34	65	16	13	162	0·13	
Dealers 22	Street sellers, &c.	376	376	685	171	147	1,755	1·46	
23	General dealers.....................	178	178	304	76	70	806	0·66	
24	Small shops	550	550	966	242	215	2,523	2·07	
25	Large shops (with assistants)	434	434	857	214	170	2,109	1·74	
Refreshments 26	Coffee and boarding houses	82	82	156	39	32	391	0·32	
27	Licensed houses	140	140	244	61	55	640	0·53	
Salaried, &c. 28	Clerks and agents..................	719	719	1,239	311	282	3,270	2·70	
29	Subordinate professional	111	111	161	41	43	467	0·39	
30	Professional	85	85	140	35	32	377	0·32	
No work 31	Ill and no occupation	65	65	115	29	26	300	0·25	
32	Independent	36	36	56	14	14	156	0·13	
Total of	male heads of families	22,746							
Females. 33	Semi-domestic employment	741	—	1,180	296	—	2,217	1·84	
34	Dress	410	—	601	150	—	1,161	0·96	
35	Small trades	414	—	640	160	—	1,214	1·02	
36	Employing and professional	52	—	72	18	—	142	0·12	
37	Supported	141	—	198	49	—	388	0·32	
38	Independent	22	—	31	8	—	61	0·05	
Total of	female heads of families	(1,780)							
39	Other adult women	—	—	—	—	—	9,995	8·25	
	Total	24,526	22,746	43,842	11,125	8,927	121161	100·00	
	Inmates of Institutions	—	—	—	—	—	2,839		
	Total population	—	—	—	—	—	124000	—	

and Classes. SHOREDITCH.
only be taken as approximately correct.

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Work.	G. Lower Middle.	H. Upper Middle.	
1	907	—	—	—	—	—	—	—	907
2	—	3,182	132	—	—	—	—	—	3,314
3	—	504	2,061	—	9	—	—	—	2,574
4	—	70	—	4,881	35	—	—	—	4,986
5	—	—	—	954	6,936	62	—	—	7,952
6	—	—	—	9	9	668	—	—	686
7	27	528	1,350	1,350	4,320	794	—	—	8,369
8	27	1,168	2,040	3,263	8,495	1,053	—	—	16,046
9	9	188	387	798	3,125	654	—	—	5,161
10 A.	—	127	218	566	3,001	734	—	—	4,646
10 B.	—	55	126	198	813	331	—	—	1,523
10 C.	—	135	233	476	1,386	109	—	—	2,339
10 D.	—	19	29	10	103	10	—	—	171
10 E.	9	254	536	1,102	2,438	238	—	—	4,577
11	—	872	1,586	2,282	4,496	348	—	—	9,584
12	—	74	160	483	1,134	74	—	—	1,925
13	—	9	—	99	468	118	—	—	694
14	—	38	103	272	973	38	—	—	1,424
15	18	160	169	815	2,002	213	—	—	3,377
16	—	—	—	111	1,126	220	—	—	1,457
17	—	—	8	33	32	—	—	—	73
18	—	145	237	842	3,119	282	—	—	4,625
19	—	258	430	660	1,381	734	—	—	3,463
20	—	—	9	29	343	1,997	767	9	3,154
21	—	—	—	—	—	—	135	27	162
22	36	286	573	340	493	27	—	—	1,755
23	26	35	95	95	346	209	—	—	806
24	—	—	35	238	1,242	982	26	—	2,523
25	—	—	—	—	47	650	595	817	2,109
26	—	—	—	18	210	145	18	—	391
27	—	9	—	27	27	149	253	175	640
28	—	26	87	208	1,357	1,247	336	9	3,270
29	—	8	8	32	162	184	65	8	467
30	—	—	—	—	—	26	26	325	377
31	—	211	62	9	9	9	—	—	300
32	—	—	—	—	74	33	41	8	156
33	—	1,301	500	267	149	—	—	—	2,217
34	—	364	270	344	178	5	—	—	1,161
35	5	398	274	369	158	5	5	—	1,214
36	—	—	—	24	54	30	34	—	142
37	—	49	49	138	152	—	—	—	388
38	—	—	—	5	26	15	15	—	61
39	96	940	1,054	1,918	4,544	1,109	210	124	9,995
Total	1,160	11,413	12,821	23,265	54,972	13,502	2,526	1,502	121,161
Per cent....	0·96	9·42	10·55	19·21	45·39	11·14	2·09	1·24	100·00

APPENDIX A (2).—*Table of Sections*

Divided into Sections according to Character of Employment of Heads of Families.

Class.		Description.	Heads of Families	More or less Dependent.			Unmarried Males over 20 and Widowers.	Total.	Percentage.	
				Wives.	Children —15.	Young Persons 15—20.				
Males.										
Labour....	1	Lowest class, loafers, &c.	390	390	69	200	136	1,185	0·93	
	2	Casual day-to-day labour	1,191	1,191	2,476	580	422	5,860	4·59	
	3	Irregular labour	562	562	1,171	274	196	2,765	2·17	
	4	Regular work, low pay ..	1,048	1,048	2,011	470	365	4,942	3·87	
	5	,, ordinary pay	1,928	1,928	3,757	878	671	9,162	7·18	
	6	Foremen and responsible work...	207	207	451	105	72	1,042	0·82	
Artisans	7	Building trades	1,148	1,148	2,376	557	400	5,629	4·41	
	8	Furniture, woodwork, &c.	3,696	3,696	8,025	1,879	1,302	18,598	14·57	
	9	Machinery and metals	738	738	1,575	370	257	3,678	2·88	
	10	A. Printing	592	592	1,214	285	207	2,890	2·26	
		B. Watches and instruments	134	134	284	66	47	665	0·52	
		C. Furs and leather	301	301	610	142	105	1,459	1·14	7·90
		D. Silk weaving	284	284	515	120	99	1,302	1·02	
		E. Sundry artisans	776	776	1,585	370	271	3,778	2·96	
	11	Dress	2,551	2,551	5,374	1,258	887	12,621	9·89	
	12	Food preparation	528	528	1,104	259	184	2,603	2·04	
Locomotion	13	Railway servants	254	254	550	128	89	1,275	1·00	
	14	Road service	197	197	379	89	69	931	0·73	
Assistants	15	Shops and refreshment houses ...	663	663	1,356	317	231	3,230	2·53	
Other wages	16	Police, soldiers, and sub-officials	301	301	601	140	105	1,448	1·13	
	17	Seamen	35	35	59	14	12	155	0·12	
	18	Other wage earners	568	568	902	210	198	2,446	1·92	
Manufacturers, &c.	19	Home industries (not employing)	981	981	2,172	507	341	4,982	3·90	
	20	Small employers	759	759	1,786	418	266	3,988	3·12	
	21	Large ,, ...	75	75	215	50	26	441	0·35	
Dealers	22	Street sellers, &c.	831	831	1,749	408	290	4,109	3·22	
	23	General dealers	226	226	459	107	79	1,097	0·86	
	24	Small shops	737	737	1,488	348	257	3,567	2·80	
	25	Large shops (employing assistants)	512	512	1,158	270	176	2,628	2·06	
Refreshments	26	Coffee and boarding houses	77	77	154	35	27	370	0·29	
	27	Licensed houses	187	187	391	91	65	921	0·72	
Salaried &c.	28	Clerks and agents	489	489	953	224	170	2,325	1·82	
	29	Subordinate professional	112	112	225	52	39	540	0·42	
	30	Professional	117	117	229	53	41	557	0·44	
No work	31	Ill and no occupation	74	74	153	35	25	361	0·28	
	32	Independent	21	21	24	6	7	79	0·06	
Total of		male heads of families	23,290							
Females.	33	Semi-domestic employment	797	—	1,226	288	—	2,311	1·81	
	34	Dress	359	—	558	131	—	1,048	0·82	
	35	Small trades	408	—	662	156	—	1,226	0·96	
	36	Employing and professional	57	—	89	20	—	166	0·13	
	37	Supported	133	—	188	44	—	365	0·29	
	38	Independent	43	—	51	12	—	106	0·08	
Total of		female heads of families	1,797							
	39	Other adult women	—	—	—	—	—	8,790	6·89	
		Total	25,087	23,290	50,374	11,966	8,134	127641	100·00	
		Inmates of Institutions	—	—	—	—	—	2,359	—	
		Total population	—	—	—	—	—	130000	—	

and Classes. BETHNAL GREEN.

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Work.	G. Lower Middle.	H. Upper Middle.	
1	1,185	—	—	—	—	—	—	—	1,185
2	—	5,680	180	—	—	—	—	—	5,860
3	—	638	2,050	—	77	—	—	—	2,765
4	—	223	—	4,686	33	—	—	—	4,942
5	—	8	—	880	8,199	75	—	—	9,162
6	—	—	—	—	44	998	—	—	1,042
7	8	592	1,204	480	2,873	472	—	—	5,629
8	17	2,950	3,100	3,170	8,600	761	—	—	18,598
9	9	253	570	280	1,974	592	—	—	3,678
10 A.	—	86	240	146	1,878	540	—	—	2,890
10 B.	—	61	95	43	310	156	—	—	665
10 C.	—	136	263	170	771	119	—	—	1,459
10 D.	—	160	379	112	523	128	—	—	1,302
10 E.	18	742	460	708	1,714	136	—	—	3,778
11	9	2,010	2,340	2,360	5,494	408	—	—	12,621
12	9	180	283	508	1,519	104	—	—	2,603
13	—	26	9	176	834	230	—	—	1,275
14	—	74	82	141	568	66	—	—	931
15	—	196	94	718	1,897	325	—	—	3,230
16	—	—	—	51	1,160	237	—	—	1,448
17	—	8	16	54	77	—	—	—	155
18	—	91	196	295	1,451	413	—	—	2,446
19	9	660	800	444	2,000	1,060	9	—	4,982
20	—	27	9	64	366	2,343	1,170	9	3,988
21	—	—	—	—	—	—	308	133	441
22	69	1,638	1,175	501	683	43	—	—	4,109
23	8	59	162	162	467	222	17	—	1,097
24	—	51	93	322	1,825	1,183	93	—	3,567
25	—	—	—	—	36	755	1,067	770	2,628
26	—	—	—	33	84	169	84	—	370
27	—	—	17	34	188	230	341	111	921
28	—	—	17	117	830	1,270	91	—	2,325
29	—	—	8	17	79	274	162	—	540
30	—	—	—	—	—	33	50	474	557
31	—	284	26	17	26	8	—	—	361
32	—	—	—	—	46	7	26	—	79
33	19	1,232	590	305	160	5	—	—	2,311
34	—	340	268	277	163	—	—	—	1,048
35	25	555	186	63	172	25	—	—	1,226
36	—	—	—	24	33	61	48	—	166
37	—	45	22	104	189	5	—	—	365
38	—	—	—	4	49	4	49	—	106
39	104	1,400	1,110	1,311	3,500	995	260	110	8,790
Total	1,489	20,405	16,044	18,977	50,892	14,452	3,775	1,607	127,641
Per cent.	1·17	15·99	12·57	14·87	39·86	11·32	2·96	1·26	100·00

Appendix A (3).—*Table of Sections*

Divided into Sections according to Character of Employment of Heads of Families.

Class.		Description.	Heads of Families.	More or less Dependent.			Unmarried Men over 20 and Widowers.	Total.	Percentage.
				Wives.	Children —15.	Young Persons, 15—20.			
Married Men.									
Labour....	1	Lowest class, loafers, &c.	409	403	139	352	795	2,098	2·85
	2	Casual day-to-day labour....	500	493	825	238	793	3,029	4·12
	3	Irregular labour	295	291	544	158	174	1,462	1·99
	4	Regular work, low pay.......	401	395	678	197	236	1,907	2·59
	5	„ ordinary pay	1,272	1,256	2,377	689	749	6,343	8·63
	6	Foremen and responsible work	115	114	244	70	68	611	0·83
Artisans	7	Building trades....................	258	255	511	149	153	1,326	1·80
	8	Furniture, woodwork, &c.	364	359	708	206	216	1,858	2·53
	9	Machinery and metals	185	183	327	95	109	899	1·23
	10	Sundry artisans	618	608	1,120	327	362	3,035	4·15
	11	Dress	2,597	2,556	5,221	1,507	1,525	13,406	18·23
	12	Food preparation	913	904	1,940	564	540	4,861	6·61
Locomo-	13	Railway servants	107	106	173	49	63	498	0·68
tion	14	Road service	127	126	253	73	75	654	0·90
Assistants	15	Shops and refreshment houses	226	223	427	124	132	1,132	1·54
Other	16	Police, soldiers, and sub-officials	215	212	429	124	126	1,106	1·51
wages	17	Seamen	27	26	48	14	15	130	0·18
	18	Other wage earners	76	75	145	42	44	382	0·52
Manufac-	19	Home industries, not employing	238	236	474	139	140	1,227	1·66
turers, &c.	20	Small employers	673	662	1,689	488	406	3,918	5·31
	21	Large „	100	100	148	43	58	449	0·61
Dealers	22	Street sellers, &c.	523	516	1,048	301	468	2,856	3·87
	23	General dealers.....................	577	569	1,163	338	337	2,984	4·05
	24	Small shops	637	630	1,157	336	372	3,132	4·23
	25	Large shops, employing assistants	350	345	690	200	206	1,791	2·45
Refresh-	26	Coffee and boarding houses	99	94	189	54	57	493	0·67
ments	27	Licensed houses	156	154	265	76	91	742	1·02
Salaried,	28	Clerks and agents................	266	262	514	149	155	1,346	1·84
&c.	29	Subordinate professional	82	81	173	58	48	437	0·59
	30	Professional	37	37	67	20	21	182	0·25
No work	31	Ill and no occupation	93	91	158	46	54	442	0·60
	32	Independent	14	14	9	2	8	47	0·06
Total of		male heads of families	(12,550)						
Females.									
	33	Semi-domestic employment	361	—	578	169	—	1,108	1·50
	34	Dress	151	—	250	73	—	474	0·64
	35	Small trades	141	—	266	77	—	484	0·66
	36	Employing and professional	30	—	39	11	—	80	0·11
	37	Supported	111	—	166	49	—	326	0·44
	38	Independent	25	—	34	10	—	69	0·09
Total of		female heads of families	(819)						
	39	Other adult women	—	—	—	—	—	6,199	8·46
		Total	13,369	12,376	25,186	7,612	8,776	73,518	100·00
		Inmates of Institutions	—	—	—	—	—	2,474	—
		Total population						75,992	

and Classes. WHITECHAPEL.

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Work.	G. Lower Middle.	H. Upper Middle.	
1	2,098	—	—	—	—	—	—	—	2,098
2	—	2,939	90	—	—	—	—	—	3,029
3	—	192	1,184	—	86	—	—	—	1,462
4	—	90	—	1,817	—	—	—	—	1,907
5	—	—	—	1,079	5,264	—	—	—	6,343
6	—	—	—	—	32	579	—	—	611
7	—	53	146	265	809	53	—	—	1,326
8	9	130	139	315	1,195	65	—	—	1,853
9	—	—	63	108	638	90	—	—	899
10	9	97	389	388	1,438	714	—	—	3,035
11	18	924	2,430	3,206	6,348	480	—	—	13,406
12	9	83	—	1,016	3,753	—	—	—	4,861
13	—	17	—	67	364	50	—	—	498
14	—	21	85	147	359	42	—	—	654
15	—	44	18	150	785	135	—	—	1,132
16	—	43	—	164	899	—	—	—	1,106
17	—	5	19	—	106	—	—	—	130
18	—	14	27	27	251	63	—	—	382
19	—	53	366	—	808	—	—	—	1,227
20	—	—	—	67	744	2,234	744	129	3,918
21	—	—	—	—	—	—	300	149	449
22	72	276	938	544	974	52	—	—	2,856
23	18	57	552	450	1,250	607	50	—	2,984
24	—	16	24	305	1,564	922	301	—	3,132
25	—	—	—	—	24	520	720	527	1,791
26	—	—	—	5	79	182	227	—	493
27	—	—	—	5	13	119	386	219	742
28	—	27	54	121	540	444	120	40	1,346
29	—	8	8	32	162	163	56	8	437
30	—	—	—	—	—	16	16	150	182
31	—	351	32	18	32	9	—	—	442
32	—	—	—	—	23	8	16	—	47
33	5	334	329	216	224	—	—	—	1,108
34	—	102	140	167	65	—	—	—	474
35	5	91	123	124	136	5	—	—	484
36	—	—	—	10	40	15	15	—	80
37	—	48	30	120	128	—	—	—	326
38	—	—	—	—	27	15	27	—	69
39	196	551	656	1,047	2,665	695	277	112	6,199
Total	2,439	6,566	7,842	11,980	31,825	8,277	3,255	1,334	73,518
Per cnt.	3·32	8·92	10·67	16·33	43·29	11·27	4·39	1·81	100·00

APPENDIX A (4).—*Table of Sections*

Divided into Sections according to Character of Employment of Heads of Families.

Class.		Description.	Heads of Families.	More or less Dependent.			Unmarried Males over 20 and Widowers.	Total.	Percentage.
				Wives.	Children —15.	Young Persons, 15—20.			
Males.									
Labour....	1	Lowest class, loafers, &c.	181	181	64	87	86	599	1·26
	2	Casual day-to-day labour	921	921	1,447	355	651	4,295	9·03
	3	Irregular labour	591	591	1,071	266	282	2,801	5·89
	4	Regular work, low pay	711	711	1,191	296	320	3,229	6·78
	5	„ ordinary pay	1,328	1,328	2,485	613	642	6,396	13·44
	6	Foremen and responsible work ...	302	302	597	147	144	1,492	3·14
Artisans	7	Building trades	244	244	445	111	117	1,161	2·44
	8	Furniture, woodwork, &c.....	300	300	524	129	142	1,395	2·94
	9	Machinery and metals	198	198	348	84	94	922	1·94
	10	Sundry artisans	421	421	739	182	200	1,963	4·12
	11	Dress	928	928	1,751	434	441	4,482	9·43
	12	Food preparation	421	421	840	209	200	2,091	4·39
Locomotion	13	Railway servants	64	64	129	33	30	320	0·67
	14	Road service	48	48	88	21	23	228	0·48
Assistants	15	Shops and refreshment houses......	169	169	300	74	80	792	1·66
Other wages	16	Police, soldiers, and sub-officials..	70	70	125	31	33	329	0·69
	17	Seamen..................................	226	226	325	79	108	964	2·02
	18	Other wage earners	139	139	215	54	67	614	1·28
Manufacturers, &c.	19	Home industries (not employing)..	183	183	358	88	87	899	1·90
	20	Small employers....................	258	258	570	140	124	1,350	2·83
	21	Large „	19	19	45	11	10	104	0·22
Dealers	22	Street sellers, &c.	199	199	350	86	95	929	1·95
	23	General dealers	78	78	156	39	37	388	0·82
	24	Small shops..........................	366	366	740	182	175	1,829	3·84
	25	Large shops (employing assistants)	85	85	165	40	40	415	0·87
Refreshments	26	Coffee and boarding houses	38	38	54	13	18	161	0·34
	27	Licensed houses	132	132	223	56	63	606	1·27
Salaried, &c.	28	Clerks and agents	163	163	296	72	78	772	1·62
	29	Subordinate professional	44	44	103	25	21	237	0·50
	30	Professional..........................	7	7	11	2	4	31	0·06
No work	31	Ill and no occupation..........	40	40	61	15	19	175	0·37
	32	Independent	10	10	11	2	5	38	0·08
Total of		male heads of families	(8,884)						
Females.									
	33	Semi-domestic employment	388	—	547	135	—	1,070	2·23
	34	Dress	204	—	281	68	—	553	1·17
	35	Small trades	128	—	193	48	—	369	0·78
	36	Employing and professional	15	—	17	4	—	36	0·08
	37	Supported	55	—	71	18	—	144	0·30
	38	Independent	2	—	5	2	—	9	0·02
Total of		female heads of families	(792)						
	39	Other adult women	—	—	—	—	—	3,390	7·15
		Total	9,676	8,884	16,941	4,251	4,436	47,578	100·00
		Inmates of Institutions	—	—	—	—	—	1,108	
		Total population	—	—	—	—	—	48,686	

and Classes. St. George's-in-the-East.

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Work.	G. Lower Middle.	H. Upper Middle.	
1	599	—	—	—	—	—	—	—	599
2	—	4,226	69	—	—	—	—	—	4,295
3	—	182	2,562	—	57	—	—	—	2,801
4	—	10	—	3,219	—	—	—	—	3,229
5	—	13	—	281	6,102	—	—	—	6,396
6	—	—	—	—	70	1,422	—	—	1,492
7	—	57	172	132	686	114	—	—	1,161
8	10	75	141	221	863	85	—	—	1,395
9	—	38	47	132	508	197	—	—	922
10	20	84	130	442	1,147	140	—	—	1,963
11	18	660	849	1,621	1,204	130	—	—	4,482
12	—	90	209	509	1,163	120	—	—	2,091
13	—	—	—	30	260	30	—	—	320
14	—	—	19	19	142	48	—	—	228
15	—	48	19	160	495	70	—	—	792
16	—	—	—	—	329	—	—	—	329
17	—	26	112	334	492	—	—	—	964
18	18	36	44	214	258	44	—	—	614
19	—	10	169	208	324	188	—	—	899
20	—	—	—	22	324	831	173	—	1,350
21	—	—	—	—	—	—	73	31	104
22	—	223	380	121	196	9	—	—	929
23	—	11	60	39	229	49	—	—	388
24	—	9	—	220	1,089	460	51	—	1,829
25	—	—	—	—	50	158	207	—	415
26	—	—	—	9	126	17	9	—	161
27	—	—	—	9	55	156	350	36	606
28	—	10	29	77	286	313	57	—	772
29	—	—	43	22	53	43	54	22	237
30	—	—	—	—	—	8	8	15	31
31	—	71	26	52	26	—	—	—	175
32	—	—	—	—	15	8	15	—	38
33	—	511	219	253	87	—	—	—	1,070
34	—	131	146	175	101	—	—	—	553
35	5	150	64	113	32	5	—	—	369
36	—	—	—	4	23	5	4	—	36
37	—	10	14	81	39	—	—	—	144
38	—	—	—	—	—	—	9	—	9
39	48	510	423	672	1,295	359	75	8	3,390
Total....	718	7,191	5,946	9,391	18,126	5,009	1,085	112	47,578
Per cent.	1·51	15·12	12·49	19·74	38·09	10·53	2·28	0·24	100·00

APPENDIX A (5).—*Table of Sections*

Divided into Sections according to Character of Employment of Heads of Families.

Class.		Description.	Heads of Families.	More or less Dependent.			Un-married Men over 20 and Widowers.	Total.	Per-centage.
				Wives.	Children —15.	Young Persons, 15—20.			
Married Men.									
Labour....	1	Lowest class, loafers, &c.	183	183	103	87	196	752	1·21
	2	Casual day-to-day labour ..	1,430	1,430	2,559	656	681	6,756	10·90
	3	Irregular labour	430	430	801	206	205	2,072	3·34
	4	Regular work, low pay	622	622	1,105	283	296	2,928	4·71
	5	„ ordinary pay	1,846	1,846	3,655	940	877	9,164	14·76
	6	Foremen and responsible work	620	620	1,202	309	295	3,046	4·91
Artisans	7	Building trades	519	519	1,043	267	250	2,598	4·18
	8	Furniture, woodwork, &c.	681	681	1,318	338	323	3,341	5·39
	9	Machinery and metals........	751	751	1,440	369	357	3,668	5·90
	10	Sundry artisans	456	456	854	219	217	2,202	3·54
	11	Dress	170	170	300	77	81	798	1·29
	12	Food preparation	244	244	479	121	116	1,204	1·94
Locomo-	13	Railway servants	67	67	125	32	32	323	0·52
tion	14	Road service	81	81	167	43	39	411	0·66
Assistants	15	Shops and refreshment houses	197	197	354	90	94	932	1·50
Other	16	Police, soldiers, and sub-officials	224	224	422	108	106	1,084	1·74
wages	17	Seamen	375	375	628	161	178	1,717	2·77
	18	Other wage earners	97	97	163	42	46	445	0·72
Manufac-	19	Home industries, not employing	196	196	404	104	94	994	1·60
turers, &c.	20	Small employers	237	237	510	131	112	1,227	1·98
	21	Large „	49	49	95	24	23	240	0·39
Dealers	22	Street sellers, &c.	182	182	343	88	86	881	1·42
	23	General dealers....................	74	74	137	35	35	355	0·57
	24	Small shops	352	352	694	177	167	1,742	2·80
	25	Large shops (employing assistants)	262	262	553	141	124	1,342	2·17
Refresh-	26	Coffee and boarding houses	90	90	158	40	43	421	0·68
ments	27	Licensed houses	174	174	283	73	82	786	1·26
Salaried,	28	Clerks and agents	450	450	803	206	213	2,122	3·42
&c.	29	Subordinate professional	174	174	322	83	82	835	1·34
	30	Professional	82	82	163	42	39	408	0·66
No work	31	Ill and no occupation	37	37	68	17	18	177	0·28
	32	Independent	32	32	40	10	15	129	0·21
Total of		male heads of families	11,384						
Females.									
	33	Semi-domestic employment	350	—	491	126	—	967	1·56
	34	Dress	198	—	284	73	—	555	0·90
	35	Small trades	125	—	190	49	—	364	0·59
	36	Employing and professional	13	—	19	5	—	37	0·06
	37	Supported	101	—	146	37	—	284	0·46
	38	Independent	35	—	74	19	—	128	0·21
Total of		female heads of families....	822						
	39	Other adult women	—	—	—	—	—	4,628	7·46
		Total............	12,206	11,384	22,495	5,828	5,522	62,063	100·00
		Inmates of Institutions	—	—	—	—	—	657	
		Total population........	—	—	—	—	—	62,720	

and Classes. STEPNEY.

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Work.	G. Lower Middle.	H. Upper Middle.	
1	752	—	—	—	—	—	—	—	752
2	—	6,546	210	—	—	—	—	—	6,756
3	—	378	1,436	—	258	—	—	—	2,072
4	—	130	—	2,798	—	—	—	—	2,928
5	—	83	—	2,154	6,927	—	—	—	9,164
6	—	—	—	—	46	3,000	—	—	3,046
7	9	173	129	364	1,611	312	—	—	2,598
8	9	158	134	468	2,272	300	—	—	3,341
9	9	174	73	477	2,642	293	—	—	3,668
10	—	75	195	195	1,021	716	—	—	2,202
11	9	127	15	160	367	120	—	—	798
12	9	54	—	290	851	—	—	—	1,204
13	—	4	—	17	125	177	—	—	323
14	—	35	42	74	233	27	—	—	411
15	—	23	10	99	680	120	—	—	932
16	—	27	—	127	930	—	—	—	1,084
17	—	43	200	—	1,474	—	—	—	1,717
18	—	11	26	26	306	76	—	—	445
19	—	71	222	—	701	—	—	—	994
20	—	—	—	172	123	540	294	98	1,227
21	—	—	—	—	—	—	160	80	240
22	27	131	215	121	368	19	—	—	881
23	—	24	89	48	128	66	—	—	355
24	—	—	14	87	788	627	226	—	1,742
25	—	—	—	—	18	384	544	396	1,342
26	—	—	—	—	42	126	253	—	421
27	—	—	—	—	15	86	481	204	786
28	—	21	—	191	891	554	338	127	2,122
29	—	16	17	64	312	298	112	16	835
30	—	—	—	—	—	82	40	336	408
31	—	71	27	52	27	—	—	—	177
32	—	—	—	—	69	15	45	—	129
33	5	391	242	230	99	—	—	—	967
34	—	153	132	154	116	—	—	—	555
35	5	92	67	68	127	5	—	—	364
36	—	—	—	4	23	5	5	—	37
37	—	57	10	26	191	—	—	—	284
38	—	—	—	10	52	10	56	—	128
39	67	728	284	681	1,910	638	215	105	4,628
Total	901	9,796	3,789	9,157	25,743	8,546	2,769	1,362	62,063
Per cnt.	1·45	15·78	6·10	14·74	41·48	13·78	4·48	2·19	100·00

APPENDIX A (6).—*Table of Sections*

Divided into Sections according to Character of Employment of Heads of Families.

Class.	Description.	Heads of Families.	More or less Dependent.			Un-married Men over 20 and Widowers.	Total.	Per-centage.
			Wives.	Children —15.	Young Persons, 15—20.			
Married Men.								
Labour 1	Lowest class, loafers, &c.	224	224	73	104	91	716	0·65
2	Casual day-to-day labour	673	673	1,215	302	350	3,213	2·91
3	Irregular labour	492	492	974	240	200	2,398	2·18
4	Regular work, low pay	688	688	1,183	294	279	3,132	2·84
5	„ ordinary pay	2,886	2,886	5,418	1,345	1,171	13,706	12·43
6	Foremen and responsible work	558	558	1,037	256	227	2,636	2·39
Artisans 7	Building trades	1,290	1,290	2,445	604	523	6,152	5·57
8	Furniture, woodwork, &c.	1,166	1,166	2,351	582	474	5,739	5·20
9	Machinery and metals	819	819	1,585	394	332	3,949	3·58
10	Sundry artisans	1,243	1,243	2,326	574	504	5,890	5·33
11	Dress	1,227	1,227	2,362	582	498	5,896	5·34
12	Food preparation	1,020	1,020	1,943	482	413	4,878	4·42
Locomotion 13	Railway servants	188	188	370	94	76	916	0·83
14	Road service	378	378	759	186	153	1,854	1·68
Assistants 15	Shops and refreshment houses	831	831	1,565	386	336	3,949	3·58
Other wages 16	Police, soldiers, and sub-officials	441	441	806	200	180	2,068	1·87
17	Seamen	327	327	542	134	133	1,463	1·32
18	Other wage earners	375	375	584	146	152	1,632	1·49
Manufacturers, &c. 19	Home industries, not employing	396	396	812	202	160	1,966	1·78
20	Small employers	648	648	1,471	366	262	3,395	3·08
21	Large „	89	89	240	60	36	514	0·47
Dealers 22	Street sellers, &c.	277	277	544	136	113	1,347	1·22
23	General dealers	498	498	1,095	272	201	2,564	2·32
24	Small shops	663	663	1,283	318	270	3,197	2·89
25	Large shops, employing assistants	511	511	1,046	260	207	2,535	2·29
Refreshments 26	Coffee and boarding houses	46	46	109	26	19	246	0·22
27	Licensed houses	223	223	384	96	90	1,016	0·93
Salaried, &c. 28	Clerks and agents	1,232	1,232	2,334	580	500	5,878	5·33
29	Subordinate professional	334	334	636	158	135	1,597	1·45
30	Professional	121	121	256	64	49	611	0·56
No work 31	Ill and no occupation	59	59	123	32	24	297	0·27
32	Independent	101	101	136	34	41	413	0·37
Total of	male heads of families	(20,024)						
Females.								
33	Semi-domestic employment	651	—	986	244	—	1,881	1·71
34	Dress	484	—	705	178	—	1,367	1·24
35	Small trades	184	—	263	66	—	513	0·46
36	Employing and professional	56	—	112	28	—	196	0·18
37	Supported	146	—	216	54	—	416	0·38
38	Independent	105	—	150	38	—	293	0·27
Total of	female heads of families	(1,626)						
39	Other adult women	—	—	—	—	—	9,892	8·97
	Total	21,650	20,024	40,439	10,117	8,199	110,321	100·00
	Inmates of Institutions	—	—	—	—	—	2,008	—
	Total population	—	—	—	—	—	112,329	

and Classes. MILE END OLD TOWN.

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Work.	G. Lower Middle.	H. Upper Middle.	
1	716	—	—	—	—	—	—	—	716
2	—	3,113	100	—	—	—	—	—	3,213
3	—	575	1,623	—	200	—	—	—	2,398
4	—	45	—	3,087	—	—	—	—	3,132
5	—	54	—	2,508	11,144	—	—	—	13,706
6	—	—	—	—	36	2,600	—	—	2,636
7	9	360	492	738	4,245	308	—	—	6,152
8	9	278	344	746	3,960	402	—	—	5,739
9	9	109	142	288	2,848	553	—	—	3,949
10	9	145	416	417	2,600	2,303	—	—	5,890
11	—	59	58	1,297	3,834	648	—	—	5,896
12	—	98	368	368	4,044	—	—	—	4,878
13	—	11	—	49	514	342	—	—	916
14	—	62	105	275	1,262	150	—	—	1,854
15	—	76	36	295	3,022	520	—	—	3,949
16	—	39	—	174	1,855	—	—	—	2,068
17	—	28	124	—	1,311	—	—	—	1,463
18	—	31	69	69	1,171	292	—	—	1,632
19	—	117	378	—	1,471	—	—	—	1,966
20	—	—	—	66	694	1,552	951	132	3,395
21	—	—	—	—	—	—	350	164	514
22	27	220	310	272	491	27	—	—	1,347
23	—	46	312	310	1,150	700	46	—	2,564
24	—	32	—	126	2,390	480	169	—	3,197
25	—	—	—	—	56	782	714	983	2,535
26	—	—	—	—	15	74	157	—	246
27	—	—	—	—	20	173	539	284	1,016
28	—	29	175	292	1,880	2,272	940	290	5,878
29	—	32	32	128	600	549	224	32	1,597
30	—	—	—	—	—	50	60	501	611
31	—	208	62	9	9	9	—	—	297
32	—	—	—	—	192	90	110	21	413
33	5	567	514	510	285	—	—	—	1,881
34	—	371	306	387	303	—	—	—	1,367
35	5	99	76	77	246	10	—	—	513
36	—	—	—	30	40	63	63	—	196
37	—	42	15	68	291	—	—	—	416
38	—	—	—	10	110	35	138	—	293
39	78	675	601	1,258	5,125	1,466	453	236	9,892
otal	867	7,521	6,658	13,854	57,414	16,450	4,914	2,643	110,321
er cnt.	0·79	6·82	6·03	12·55	52·04	14·91	4·46	2·40	100·00

APPENDIX A (7).—*Table of Sections*

Divided into Sections according to Character of Employment of Heads of Families.

Class.		Description.	Heads of Families.	More or less Dependent.			Unmarried Men over 20 and Widowers.	Total.	Percentage.
				Wives.	Children —15.	Young Persons, 15—20.			
Married Men.									
Labour....	1	Lowest class, loafers, &c.....	433	425	89	254	332	1,533	0·92
	2	Casual day-to-day labour....	2,705	2,652	5,315	1,184	1,019	12,875	7·74
	3	Irregular labour	952	933	1,876	418	359	4,538	2·73
	4	Regular work, low pay........	2,847	2,792	5,445	1,214	1,072	13,370	8·03
	5	„ ordinary pay	3,421	3,355	6,921	1,543	1,288	16,528	9·92
	6	Foremen and responsible work	1,297	1,272	2,676	584	488	6,317	3·80
Artisans....	7	Building trades..................	2,537	2,487	5,294	1,180	956	12,454	7·48
	8	Furniture, woodwork, &c.	2,024	1,985	4,335	966	762	10,072	6·06
	9	Machinery and metals	2,908	2,851	5,933	1,322	1,095	14,109	8·48
	10	Sundry artisans..................	1,349	1,323	2,804	625	508	6,609	3·97
	11	Dress	779	764	1,617	360	294	3,814	2·29
	12	Food preparation	505	495	1,025	229	190	2,444	1·47
Locomotion	13	Railway servants	763	748	1,600	357	288	3,756	2·26
	14	Road service	289	284	556	125	108	1,362	0·82
Assistants	15	Shops and refreshment houses	625	613	1,267	283	235	3,023	1·82
Other	16	Police, soldiers, and sub-officials	611	599	1,284	286	229	3,009	1·81
wages	17	Seamen	1,291	1,266	2,193	488	486	5,724	3·44
	18	Other wage earners	479	470	678	152	180	1,959	1·18
Manufacturers,	19	Home industries, not employing	354	347	727	163	133	1,724	1·03
	20	Small employers	427	419	945	211	160	2,162	1·30
&c.	21	Large „	83	82	172	39	31	407	0·25
Dealers....	22	Street sellers, &c.	259	254	542	121	98	1,274	0·77
	23	General dealers..................	183	180	349	78	69	859	0·52
	24	Small shops	1,059	1,039	1,721	383	399	4,601	2·76
	25	Large shops, employing assistants.......................}	469	460	1,042	233	176	2,380	1·43
Refreshments	26	Coffee and boarding houses	121	119	234	52	46	572	0·34
	27	Licensed houses	219	215	522	117	82	1,155	0·69
Salaried,	28	Clerks and agents..............	1,411	1,383	2,830	631	531	6,786	4·08
&c.	29	Subordinate professional....	583	572	1,176	262	220	2,813	1·69
	30	Professional	230	226	486	109	87	1,138	0·68
No work	31	Ill and no occupation	154	151	313	70	59	747	0·45
	32	Independent	107	105	172	38	40	462	0·28
Total of		male heads of families	(31,474)						
Females.									
	33	Semi-domestic employment	1,030	—	1,552	346	—	2,928	1·76
	34	Dress	350	—	522	117	—	989	0·59
	35	Small trades	314	—	505	113	—	932	0·56
	36	Employing and professional	55	—	94	21	—	170	0·10
	37	Supported	213	—	329	74	—	616	0·3
	38	Independent	164	—	191	43	—	398	0·2
Total of		female heads of families	(2,126)						
	39	Other adult women	—	—	—	—	—	9,784	5·8
		Total	33,600	30,866	65,332	14,791	12,020	166,393	100·0
		Inmates of Institutions	—	—	—	—	—	2,838	—
		Total population	—	—	—	—	—	169,231	

and Classes. POPLAR.

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Work.	G. Lower Middle.	H. Upper Middle.	
1	1,533	—	—	—	—	—	—	—	1,533
2	—	12,475	400	—	—	—	—	—	2,875
3	—	1,130	2,823	—	585	—	—	—	4,538
4	—	191	—	13,179	—	—	—	—	13,370
5	—	131	—	2,562	13,835	—	—	—	16,528
6	—	—	—	—	88	6,229	—	—	6,317
7	36	1,014	1,066	1,950	7,554	834	—	—	12,454
8	17	813	756	1,700	6,111	675	—	—	10,072
9	9	456	783	1,452	10,284	1,125	—	—	14,109
10	9	237	445	445	3,284	2,189	—	—	6,609
11	9	341	624	624	1,773	443	—	—	3,814
12	—	108	186	186	1,964	—	—	—	2,444
13	—	46	—	80	1,517	2,113	—	—	3,756
14	—	73	115	295	789	90	—	—	1,362
15	—	84	18	128	2,393	400	—	—	3,023
16	—	84	—	147	2,778	—	—	—	3,009
17	—	159	280	—	5,285	—	—	—	5,724
18	—	55	47	48	1,809	—	—	—	1,959
19	—	153	480	—	1,091	—	—	—	1,724
20	—	—	—	—	454	975	597	136	2,162
21	—	—	—	—	—	—	270	137	407
22	27	180	243	210	578	36	—	—	1,274
23	—	26	175	95	346	209	8	—	859
24	—	54	27	409	2,145	1,398	568	—	4,601
25	—	—	—	—	52	720	670	938	2,380
26	—	—	—	12	40	234	286	—	572
27	—	—	—	—	44	191	595	825	1,155
28	—	75	163	611	2,864	1,832	1,018	223	6,786
29	—	56	56	250	1,048	955	392	56	2,813
30	—	—	—	—	—	88	110	940	1,138
31	—	520	157	26	26	18	—	—	747
32	—	—	—	—	212	102	124	24	462
33	10	1,074	522	655	667	—	—	—	2,928
34	—	306	197	242	244	—	—	—	989
35	5	283	167	168	294	15	—	—	932
36	—	—	—	24	37	61	48	—	170
37	—	75	10	38	493	—	—	—	616
38	—	—	—	15	160	50	173	—	398
39	103	1,261	615	1,604	4,412	1,310	305	174	9,784
Total....	1,758	21,460	10,355	27,155	75,256	22,292	5,164	2,953	166,393
Per cnt.	1·06	12·90	6·22	16·31	45·23	13·40	3·11	1·77	100·00

APPENDIX A (8).—*Table of Sections*

Divided into Sections according to Character of Employment of Heads of Families.

Class.	Description.	Heads of Families.	More or less Dependent.			Unmarried Males over 20 and Widowers.	Total.	Percentage.	
			Wives.	Children —15.	Young Persons, 15—20.				
Males.									
Labour....	1 Lowest class, loafers, &c.....	374	374	158	192	162	1,260	0·69	
	2 Casual day-to-day labour....	624	624	1,332	312	271	3,163	1·73	
	3 Irregular labour	498	498	1,087	255	217	2,555	1·40	
	4 Regular work, low pay........	1,002	1,002	2,128	501	435	5,068	2·77	
	5 „ ordinary pay	1,629	1,629	3,248	764	706	7,976	4·36	
	6 Foremen and responsible work...	311	311	654	153	135	1,564	0·85	
Artisans	7 Building trades..................	2,593	2,593	5,598	1,318	1,124	13,226	7·23	
	8 Furniture, woodwork, &c.	1,517	1,517	3,225	759	658	7,676	4·20	
	9 Machinery and metals........	620	620	1,448	340	268	3,296	1·80	
	10 A. Printing..........................	773	773	1,598	374	335	3,853	2·11	5·87
	B. Watches, instruments, &c.	431	431	922	215	186	2,185	1·19	
	C. Furs and leather	296	296	662	155	128	1,537	0·84	
	D. Silk weaving	7	7	15	4	3	36	0·02	
	E. Sundry artisans..................	632	632	1,293	302	274	3,133	1·71	
	11 Dress	1,696	1,696	3,507	826	736	8,461	4·63	
	12 Food preparation	358	358	741	173	156	1,786	0·98	
Locomotion	13 Railway servants	382	382	787	185	165	1,901	1·04	
	14 Road service	592	592	1,304	306	257	3,051	1·67	
Assistants	15 Shops and refreshment houses ...	1,015	1,015	2,113	496	440	5,079	2·78	
Other wages	16 Police, soldiers, and sub-officials	452	452	941	221	196	2,262	1·24	
	17 Seamen	52	52	78	18	22	222	0·12	
	18 Other wage earners	774	774	1,311	306	335	3,500	1·91	
Manufacturers, &c.	19 Home industries (not employing)	850	850	1,796	421	368	4,285	2·34	
	20 Small employers	828	828	1,888	443	358	4,345	2·38	
	21 Large „	62	62	154	36	27	341	0·19	
Dealers	22 Street sellers, &c.	357	357	806	189	155	1,864	1·02	
	23 General dealers.....................	172	172	379	89	75	887	0·49	
	24 Small shops	693	693	1,364	319	300	3,369	1·84	
	25 Large „ (with assistants)	455	455	1,070	251	197	2,428	1·33	
Refreshments	26 Coffee and boarding house	53	53	113	26	23	268	0·15	
	27 Licensed houses	96	96	185	44	41	462	0·25	
Salaried, &c.	28 Clerks and agents................	3,269	3,269	6,492	1,521	1,418	15,969	8·73	
	29 Subordinate professional....	420	420	869	204	182	2,095	1·15	
	30 Professional	234	234	495	116	102	1,181	0·65	
No work	31 Ill and no occupation	83	83	185	44	36	431	0·23	
	32 Independent	122	122	179	42	52	517	0·28	
Total of	male heads of families........	24,322							
Females.	33 Semi-domestic employment	1,010	—	1,629	382	—	3,021	1·65	
	34 Dress	368	—	572	133	—	1,073	0·59	
	35 Small trades	175	—	308	72	—	555	0·30	
	36 Employing and professional	85	—	138	32	—	255	0·14	
	37 Supported	172	—	252	59	—	483	0·26	
	38 Independent	178	—	238	56	—	472	0·26	
Total of	female heads of families	1,988							
	39 Other adult women	—	—	—	—	—	15,773	8·63	
	40 Population of unscheduled houses*	—	—	—	—	—	40,000	21·87	
	Total............	26,310	24,322	53,262	12,654	10,543	182864	100·00	
	Inmates of Institutions	—	—	—	—	—	3,136	—	
	Total population	—	—	—	—	—	186000		

* See note, p. 331.

and Classes. HACKNEY.

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Work.	G. Lower Middle.	H. Upper Middle.	
1	1,260	—	—	—	—	—	—	—	1,260
2	—	3,146	17	—	—	—	—	—	3,163
3	—	942	1,536	—	77	—	—	—	2,555
4	—	440	—	4,569	59	—	—	—	5,068
5	—	8	—	753	7,100	115	—	—	7,976
6	—	—	—	—	18	1,546	—	—	1,564
7	43	1,613	2,065	700	6,570	2,235	—	—	13,226
8	8	874	890	668	4,278	958	—	—	7,676
9	18	240	107	205	1,826	900	—	—	3,296
A.	—	50	209	84	1,596	1,914	—	—	3,853
B.	9	136	43	154	802	1,041	—	—	2,185
10 C.	—	182	148	182	825	200	—	—	1,537
D.	—	—	—	18	18	—	—	—	36
E.	17	265	257	621	1,600	373	—	—	3,133
11	—	1,280	1,457	1,120	3,904	700	—	—	8,461
12	8	134	94	242	1,141	167	—	—	1,786
13	8	25	—	208	1,078	582	—	—	1,901
14	—	292	250	457	1,682	370	—	—	3,051
15	—	268	126	756	3,175	754	—	—	5,079
16	—	8	50	34	1,750	420	—	—	2,262
17	—	14	—	14	172	22	—	—	222
18	8	121	129	363	2,046	833	—	—	3,500
19	8	515	480	396	1,467	1,360	59	—	4,285
20	—	9	9	9	176	2,476	1,605	61	4,345
21	—	—	—	—	—	—	185	156	341
22	44	507	544	157	507	105	—	—	1,864
23	17	69	69	52	250	353	77	—	887
24	—	73	73	309	1,277	1,515	122	—	3,369
25	—	—	—	—	9	797	1,515	107	2,428
26	—	—	—	25	84	134	25	—	268
27	—	—	16	—	57	122	194	73	462
28	—	295	196	320	2,880	7,500	4,360	418	15,969
29	—	17	33	8	184	970	850	33	2,095
30	—	—	—	—	—	109	372	700	1,181
31	—	328	69	17	17	—	—	—	431
32	—	—	—	—	170	184	141	22	517
33	15	1,580	494	494	403	35	—	—	3,021
34	—	291	131	302	315	34	—	—	1,073
35	—	174	37	133	169	37	5	—	555
36	—	—	—	20	105	90	40	—	255
37	—	80	28	75	230	65	5	—	483
38	—	—	—	26	215	101	130	—	472
39	184	1,734	1,184	1,668	5,993	3,595	1,219	196	15,773
40	—	—	—	—	8,500	—	—	31,500	40,000
Total	1,647	15,710	10,741	15,159	62,725	32,712	10,904	33,266	182,864
Per cent....	0·91	8·58	5·85	8·35	34·29	17·85	5·98	18·19	100·00

Appendix A (9).—*Table of Sections*

Divided into Sections according to Character of Employment of Heads of Families.

Class.		Description.	Heads of Families.	More or less Dependent.			Unmarried Males over 20 and Widowers.	Total.	Percentage.
				Wives.	Children —15.	Young Persons, 15—20.			
Males.									
Labour....	1	Lowest class, loafers, &c.	2,120	2,106	578	1,232	1,754	7,790	1·10
	2	Casual day-to-day labour	8,101	8,041	15,184	3,653	4,363	39,342	5·53
	3	Irregular labour	3,861	3,837	7,466	1,820	1,627	18,610	2·61
	4	Regular work, low pay	7,410	7,349	13,508	3,229	2,998	34,494	4·87
	5	„ ordinary pay	14,390	14,308	27,701	6,782	6,070	69,251	6·78
	6	Foremen and responsible work ...	3,244	3,218	6,478	1,539	1,351	15,830	2·23
Artisans	7	Building trades	7,784	7,731	15,382	3,690	3,102	37,689	5·33
	8	Furniture, woodwork, &c.....	11,596	11,552	23,653	5,704	4,539	57,044	8·04
	9	Machinery and metals	6,694	6,635	13,241	3,141	2,675	32,386	4·57
	10	Sundry artisans	8,967	8,931	17,307	4,227	3,617	43,049	6·05
	11	Dress	10,264	10,208	20,440	5,174	4,515	50,601	7·16
	12	Food preparation	4,045	4,026	8,079	2,051	1,805	20,006	2·82
Locomotion	13	Railway servants	1,590	1,574	3,221	761	636	7,782	1·09
	14	Road service	1,409	1,403	2,788	683	581	6,864	0·97
Assistants	15	Shops and refreshment houses.....	3,442	3,427	6,570	1,601	1,395	16,435	2·32
Other wages	16	Police, soldiers and sub-officials ...	2,166	2,151	4,251	1,085	898	10,501	1·48
	17	Seamen	2,298	2,272	3,821	896	939	10,226	1·44
	18	Other wage earners	2,893	2,883	4,169	1,017	141	12,103	1·71
Manufacturers, &c.	19	Home industries (not employing)	3,070	3,061	6,335	1,551	1,238	15,255	2·16
	20	Small employers	3,636	3,617	8,279	2,083	1,579	19,194	2·71
	21	Large „	449	448	980	243	197	2,317	0·32
Dealers	22	Street sellers, &c.	2,647	2,635	5,261	1,311	1,297	18,151	1·86
	23	General dealers	1,814	1,803	3,663	945	828	9,053	1·28
	24	Small shops	4,364	4,337	8,049	1,986	1,855	20,591	2·91
	25	{Large shops (employing assistants) ....}	2,623	2,609	5,511	1,358	1,099	13,200	1·87
Refreshments	26	Coffee and boarding houses	553	546	1,054	259	242	2,654	0·37
	27	Licensed houses	1,231	1,225	2,312	570	528	5,866	0·82
Salaried, &c.	28	Clerks and agents	4,730	4,698	8,969	2,173	1,929	22,499	3·18
	29	Subordinate professional	1,440	1,428	2,796	674	588	6,926	0·98
	30	Professional	679	675	1,352	325	273	3,304	0·47
No work	31	Ill and no occupation...........	522	517	991	244	225	2,499	0·35
	32	Independent	321	319	448	106	130	1,324	0·18
Total of		male heads of families	130,352						
Females.									
	33	Semi-domestic employment	4,318	—	6,560	1,604	—	12,482	1·77
	34	Dress	2,156	—	3,201	790	—	6,147	0·87
	35	Small trades	1,714	—	2,719	669	—	5,102	0·72
	36	Employing and professional	278	—	442	107	—	827	0·11
	37	Supported	900	—	1,314	325	—	2,539	0·36
	38	Independent	396	—	536	132	—	1,064	0·15
Total of		female heads of families	9,762						
	39	Other adult women	—	—	—	—	—	52,678	7·46
		Total	140,114	129,570	264,609	65,690	56,014	708,675	100
		Inmates of Institutions.......	—	—	—	—	—	14,283	—
		Total population	—	—	—	—	—	722,958	

and Classes. **EAST LONDON.**

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Labour.	G. Lower Middle.	H. Upper Middle.	
1	7,790	—	—	—	—	—	—	—	7,790
2	—	38,161	1,181	—	—	—	—	—	39,342
3	—	3,599	13,739	—	1,272	—	—	—	18,610
4	—	759	—	33,667	68	—	—	—	34,494
5	—	289	—	10,418	58,407	137	—	—	69,251
6	—	—	—	9	325	15,496	—	—	15,830
7	89	2,777	4,559	5,279	22,098	2,887	—	—	37,689
8	98	5,572	6,654	9,883	31,496	3,341	—	—	57,044
9	45	1,218	2,065	3,535	22,019	3,504	—	—	32,386
10	74	2,413	4,154	5,418	22,427	8,563	—	—	43,049
11	63	4,993	7,902	11,550	23,516	2,577	—	—	50,601
12	27	687	1,206	3,360	14,428	298	—	—	20,006
13	—	113	9	518	4,082	3,060	—	—	7,782
14	—	303	551	1,223	4,326	461	—	—	6,864
15	18	631	364	2,365	11,274	1,783	—	—	16,435
16	—	193	—	774	9,077	457	—	—	10,501
17	—	269	759	421	8,777	—	—	—	10,226
18	18	383	646	1,521	8,365	1,170	—	—	12,103
19	9	1,322	2,845	1,312	7,776	1,982	9	—	15,255
20	—	27	18	420	3,048	10,472	4,696	513	19,194
21	—	—	—	—	—	—	1,596	721	2,317
22	258	2,954	3,834	2,109	3,783	213	—	—	13,151
23	52	258	1,445	1,199	3,916	2,062	121	—	9,053
24	—	162	193	1,707	11,043	6,052	1,434	—	20,591
25	—	—	—	—	283	3,969	4,517	4,431	13,200
26	—	—	—	77	596	947	1,034	—	2,654
27	—	9	17	75	362	1,104	2,945	1,354	5,866
28	—	188	525	1,617	8,648	7,932	2,900	689	22,499
29	—	120	172	545	2,416	2,466	1,065	142	6,926
30	—	—	—	—	—	253	310	2,741	3,304
31	—	1,716	392	183	155	53	—	—	2,499
32	—	—	—	—	631	263	377	53	1,324
33	44	5,410	2,916	2,436	1,671	5	—	—	12,482
34	—	1,767	1,459	1,746	1,170	5	—	—	6,147
35	55	1,668	957	1,182	1,165	70	5	—	5,102
36	—	—	—	120	250	240	217	—	827
37	—	326	150	575	1,483	5	—	—	2,539
38	—	—	—	44	424	129	467	—	1,064
39	692	6,065	4,794	8,440	23,451	6,572	1,795	869	52,678
Total	9,332	84,352	63,506	113,728	314,228	88,528	23,488	11,513	708,675
Per cent...	1·32	11·91	8·96	16·05	44·34	12·50	3·32	1·60	100·00

APPENDIX A (10).—*Table of Sections*

Divided into Sections according to Character of Employment of Heads of Families.

Class.	Description.	Heads of Families.	More or less Dependent.			Un-married Males over 20 and Widowers.	Total.	Per-cent-age.
			Wives.	Children —15.	Young Persons, 15—20.			
Males.								
Labour 1	Lowest class, loafers, &c.....	2,494	2,480	736	1,424	1,916	9,050	1·02
2	Casual day-to-day labour....	8,725	8,665	16,516	3,965	4,634	42,505	4·77
3	Irregular labour	4,358	4,335	8,553	2,075	1,844	21,165	2·37
4	Regular work, low pay	8,412	8,351	15,636	3,730	3,433	39,562	4·44
5	„ ordinary pay	16,019	15,937	30,949	7,546	6,776	77,227	8·66
6	Foremen and responsible work...	3,555	3,529	7,132	1,692	1,486	17,394	1·95
Artisans.... 7	Building trades	10,377	10,324	20,980	5,008	4,226	50,915	5·71
8	Furniture, woodwork, &c.	13,113	13,069	26,878	6,463	5,197	64,720	7·26
9	Machinery and metals	7,314	7,255	14,689	3,481	2,943	35,682	4·00
10	Sundry artisans..................	11,106	11,070	21,797	5,277	4,543	53,793	6·03
11	Dress	11,960	11,904	23,947	6,000	5,251	59,062	6·63
12	Food preparation	4,403	4,384	8,820	2,224	1,961	21,792	2·44
Locomo- 13	Railway servants	1,972	1,956	4,008	946	801	9,683	1·09
tion 14	Road service	2,001	1,995	4,092	989	838	9,915	1·11
Assistants 15	Shops	4,457	4,442	8,683	2,097	1,835	21,514	2·41
Other 16	Police, soldiers, and sub-officials	2,618	2,603	5,192	1,256	1,094	12,763	1·43
wages 17	Seamen	2,350	2,324	3,899	914	961	10,448	1·17
18	Other wage earners	3,667	3,657	5,480	1,323	1,476	15,603	1·75
Manufac- 19	Home industries (not employing)	3,920	3,911	8,131	1,972	1,606	19,540	2·20
turers, 20	Small employers	4,464	4,445	10,167	2,526	1,937	23,539	2·64
&c. 21	Large „	511	510	1,134	279	224	2,658	0·30
Dealers 22	Street sellers, &c.	3,004	2,992	6,067	1,500	1,452	15,015	1·68
23	General dealers	1,986	1,975	4,042	1,034	903	9,940	1·11
24	Small shops	5,057	5,030	9,413	2,305	2,155	23,960	2·69
25	Large shops (employing assistants)	3,078	3,064	6,581	1,609	1,296	15,628	1·75
Refresh- 26	Coffee and boarding houses	606	599	1,167	285	265	2,922	0·33
ment 27	Licensed houses	1,327	1,321	2,497	614	569	6,328	0·71
Salaried, 28	Clerks and agents	7,999	7,967	15,461	3,694	3,347	38,468	4·31
&c. 29	Subordinate professional....	1,860	1,848	3,665	878	770	9,021	1·02
30	Professional	913	909	1,847	441	375	4,485	0·50
No work 31	Ill and no occupation	605	600	1,176	288	261	2,930	0·33
32	Independent	443	441	627	148	182	1,841	0·21
Total of	male heads of families........	(154,674)						
Females. 33	Semi-domestic employment	5,328	—	8,189	1,986	—	15,503	1·74
34	Dress	2,524	—	3,773	923	—	7,220	0·81
35	Small trades	1,889	—	3,027	741	—	5,657	0·63
36	Employing and professional	363	—	580	139	—	1,082	0·12
37	Supported	1,072	—	1,566	384	—	3,022	0·34
38	Independent	574	—	774	188	—	1,536	0·17
Total	of female heads of families	(11,750)						
39	Other adult women	—	—	—	—	—	68,451	7·68
40	Population of unscheduled houses	—	—	—	—	—	40,000	4·49
	Total	166,424	153,892	317,871	78,344	66,557	891,539	100
	Inmates of Institutions	—	—	—	—	—	17,419	—
	Total population	—	—	—	—	—	908,958	

and Classes. EAST LONDON AND HACKNEY.

Divided into Classes according to Means and Position of Heads of Families.

Section.	Very Poor.		Poor.		Comfortable.		Well-to-do.		Total.
	A. Lowest Class.	B. Casual Earnings.	C. Irregular Earnings.	D. Regular Minimum.	E. Ordinary Standard Earnings.	F. Highly Paid Work.	G. Lower Middle.	H. Upper Middle.	
1	9,050	—	—	—	—	—	—	—	9,050
2	—	41,307	1,198	—	—	—	—	—	42,505
3	—	4,541	15,275	—	1,349	—	—	—	21,165
4	—	1,199	—	38,236	127	—	—	—	39,562
5	—	297	—	11,171	65,507	252	—	—	77,227
6	—	—	—	9	343	17,042	—	—	17,394
7	132	4,390	6,624	5,979	28,668	5,122	—	—	50,915
8	106	6,446	7,544	10,551	35,774	4,299	—	—	64,720
9	63	1,458	2,172	3,740	23,845	4,404	—	—	35,682
10	100	3,046	4,811	6,477	27,268	12,091	—	—	53,793
11	63	6,273	9,359	12,670	27,420	3,277	—	—	59,062
12	35	821	1,300	3,602	15,569	465	—	—	21,792
13	8	138	9	726	5,160	3,642	—	—	9,683
14	—	595	801	1,680	6,008	831	—	—	9,915
15	18	899	490	3,121	14,449	2,537	—	—	21,514
16	—	201	50	808	10,827	877	—	—	12,763
17	—	283	759	435	8,949	22	—	—	10,448
18	26	504	775	1,884	10,411	2,003	—	—	15,603
19	17	1,837	3,325	1,708	9,243	3,342	68	—	19,540
20	—	36	27	429	3,224	12,948	6,301	574	23,539
21	—	—	—	—	—	—	1,781	877	2,658
22	302	3,461	4,378	2,266	4,290	318	—	—	15,015
23	69	327	1,514	1,251	4,166	2,415	198	—	9,940
24	—	235	266	2,016	12,320	7,567	1.556	—	23,960
25	—	—	—	—	292	4,766	6,032	4,538	15,628
26	—	—	—	102	680	1,081	1,059	—	2,922
27	—	9	33	75	419	1,226	3,139	1,427	6,328
28	—	483	721	1,937	11,528	15,432	7,260	1,107	38,468
29	—	137	205	553	2,600	3,436	1,915	175	9,021
30	—	—	—	—	—	362	682	3,441	4,485
31	—	2,044	461	200	172	53	—	—	2,930
32	—	—	—	—	801	447	518	75	1,841
33	59	6,990	3,410	2,930	2,074	40	—	—	15,503
34	—	2,058	1,590	2,048	1,485	39	—	—	7,220
35	55	1,842	994	1,315	1,334	107	10	—	5,657
36	—	—	—	140	355	330	257	—	1,082
37	—	406	178	650	1,713	70	5	—	3,022
38	—	—	—	70	639	230	597	—	1,536
39	876	7,799	5,978	10,108	29,444	10,167	3,014	1,065	68,451
40	—	—	—	—	8,500	—	—	31,500	40,000
Total	10,979	100,062	74,247	128,887	376,953	121,240	34,392	44,779	891,539
Per cent.....	1·23	11·22	8·33	14.46	42·28	13·60	3·86	5·02	100·00

APPENDIX B.

The following table shows the number of acres which have been deducted from each parish as being used for non-residential purposes:—

District.	Total Acreage (as per Census).	Acreage Deducted.	Residential Area.
Mile End and Stepney	1,141	148[a]	993
St. George's-in-the-East and Whitechapel	621	99[b]	522
Bethnal Green	755	100[c]	655
Shoreditch	648	38	610
Holborn	816	30	786
St. Giles's, Westminster, and Strand	864	146[d]	718
Part of Lambeth { Lambeth Church and Waterloo Road sub-districts	515	32	483
St. Saviour, Southwark	1,119	20	1,099
St. Olave "	1,506	476[e]	1,030
Poplar	2,335	1,079[f]	1,256
Hackney	3,935	1,092[g]	2,843
Islington	3,107	326[h]	2,781
Pancras	2,672	883[i]	1,789
Marylebone and Hampstead	3,754	797[j]	2,957
Paddington	1,251	245[k]	1,006
Kensington	2,190	379[l]	1,811
Fulham	4,003	1,981[m]	2,022
Chelsea	796	48	748
St. George's, Hanover Square	1,943	638[n]	1,305
Greenwich	3,427	1,308[o]	2,119
Camberwell	4,450	1,217[o]	3,233
Lambeth (remainder)	3,427	373[o]	3,054
Wandsworth	11,455	4,579[o]	6,876
Lewisham	11,436	7,727[o]	3,709
Woolwich	6,500	2,495[o]	4,005
City of London	668	64	604

Explanation of deductions—

[a] Wharves, water, &c.
[b] London and St. Katherine's Docks, &c.
[c] Part of Victoria Park.
[d] Part of St. James's Park, &c. Buckingham Palace and grounds, and St. James's Palace not deducted.
[e] Southwark Park, Rotherhithe Docks, &c.
[f] Part of Victoria Park, Bromley Marshes, East and West India Docks, Isle of Dogs, &c.
[g] Part of Victoria Park, London Fields, Hackney Marshes, and building land.
[h] Cattle Market, Highbury Fields, &c.
[i] Highgate Fields and Cemetery, part of Regent's Park.
[j] Hampstead Heath, part of Regent's Park.
[k] Open land near Kilburn and part of Kensington Gardens.
[l] Holland Park, Kensal Green Cemetery and open land adjoining, &c.
[m] Open land, &c.
[n] Kensington Gardens (part), Hyde Park, St. James's Park (part), &c.
[o] Mainly open land.

APPENDIX C.

Metropolitan Pauperism.

District.	Population, 1881.	Percentage of Pauperism.		
		Indoor.	Outdoor.	Total.
Bethnal Green	126,961	2·0	1·16	3·2
St. George's	47,157	3·3	0·11	3·4
Whitechapel	71,363	1·9	0·08	2·7
Shoreditch	126,591	1·4	1·04	2·5
Part of Lambeth { Lambeth Church and Waterloo Road sub-districts }	(See rem	ainder of	Lambeth	below)
St. Saviour's	195,164	2·1	1·19	3·3
*Poplar	156,510	1·4	1·20	2·6
Holborn	151,835	2·95	2·34	5·3
St. Olave	134,632	1·4	1·73	2·1
Mile End	105,613	1·4	0·50	1·9
Stepney	58,543	1·8	0·05	1·9
St. Giles	45,382	1·5	0·96	2·5
Westminster (Soho and St. James)	46,549	1·7	0·41	2·1
Strand	33,582	3·6	1·15	4·7
Greenwich	131,233	1·9	3·67	4·6
Pancras	236,258	1·7	1·03	1·7
Camberwell	186,593	1·2	1·20	2·4
*Wandsworth	210,434	0·9	1·10	2·0
*Lewisham	73,327	1·2	3·40	4·6
*Hackney	186,462	1·2	2·54	3·7
Islington	282,865	0·9	1·15	2·0
*Woolwich	80,845	1·4	1·94	3·3
*Fulham	114,839	1·2	0·68	1·9
Chelsea	88,128	2·4	1·00	3·4
St. George's, Hanover Square	149,748	1·8	0·40	2·2
*Remainder of Lambeth	253,699	1·25	1·70	3·0
Marylebone	154,910	2·1	0·57	2·7
*Hampstead	45,452	0·9	0·43	1·3
*Paddington	107,218	0·9	0·33	1·2
City of London	51,439	3·4	3·21	6·6
Kensington	163,151	1·3	0·20	1·5
	3,816,483	(60,564) (1·6)	(48,511) (1·3)	(109,075) (2·9)

Note.—The figures of pauperism are the average of the first fifteen weeks in 1888. The population is taken as in 1881. The districts marked * have increased very much, and consequently the percentages given are higher than they would be on the true population.

Note to APPENDIX A (8)—HACKNEY.

No house of the annual rental of over 35*l.* is scheduled, unless it is occupied by more than one family or contains children who are attending an elementary school. In the other parishes, the number of unscheduled houses is so small that it has been found possible to classify the inhabitants of them in the same way as the rest of the population, but in Hackney the largeness of the number has necessitated their being separately stated. As the result of a very careful estimate, the number of persons occupying these unscheduled houses in Hackney is set down at 40,000, of whom 8,500 are assumed to be servants, and have been placed in Class E. The remaining 31,500 have been assigned to Class H, as consisting of members of the families.

DISCUSSION *on* MR. BOOTH'S PAPER.

BEFORE the Paper was read—

The Chairman, Dr. T. Graham Balfour, F.R.S., said: It is with feelings of deep regret that I have to announce to this meeting the death of our old, our valued, and much respected Fellow, Professor Leone Levi. Professor Levi joined the Society in 1851, and has since taken an active interest in its proceedings and in the promotion of those objects which are included within the scope of its operations. In 1860 he was elected a member of the Council, on which he has ever rendered efficient service, and in 1885 he was nominated one of the Vice-Presidents. During this long period of Fellowship, Professor Levi contributed sixteen papers, which were read to the Society and published in the *Journal*, and thus form a permanent record of the valuable work which he has done for it. I shall not enter into any detailed account of his labours, but conclude with expressing my opinion, in which I am sure the Society concur, of the great loss which statistical science has sustained in his death. I know that I express the sentiments of my colleagues on the Council when I say that we feel we have lost an able and valuable coadjutor, a man of kindly and philanthropic feelings, of unvarying courtesy, and of great literary and statistical ability. I may add that while with the Society we feel this loss, many of the members of the Council have in addition to deplore that of an esteemed personal friend. I have also, I regret, to report the death of a distinguished Foreign Honorary Fellow, Professor F. X. von Neumann-Spallart, of Vienna.

(The Paper was then read.)

Mr. FREDERICK SCOTT (a member of the Council of the Manchester Statistical Society) said he quite appreciated the great value of the work undertaken by Mr. Booth, and the very great labour he had bestowed upon his paper. The fact that he himself had ventured to enter upon a similar inquiry in Manchester was the best tribute he could pay to the value of Mr. Booth's work.

Mr. R. GIFFEN said that though he had no special knowledge of the subject, yet as one of those who had been connected with the Royal Statistical Society for a long time, he wished to take the opportunity of calling particular attention to the very great labour, diligence, and skill which Mr. Booth had evidently bestowed upon the various papers which he had read before the Society as to the condition of the masses at the East End, the present paper being the latest of the series until now, though he hoped it would not be the last. Mr. Booth had brought before them, as the result of voluntary labour, a great deal of useful information on a very novel subject, and had treated it in a most careful and business like way. When a gentleman put himself to a good deal of expense and labour to collect a great mass of original data, and then took the trouble to digest these data and bring the results before the Society, it was only right to acknowledge that he had done very well statistically, and that the Society was proud of him. The method adopted was a sound one, and it was a matter of satisfaction that it had been applied to the conditions of society in which we live. Looking back two or three centuries, one thing that had been the cause of a great deal of misapprehension as to what the real progress of society had been, was the want of any estimate at different times of the proportions of the different classes of society. A description was found in past times of a particular class, and then people roughly compared it with what they imagined to be the corresponding class at the present time, and very extraordinary conclusions were drawn, because sometimes it happened that what really constituted the great mass of society in a past time was compared with what Mr. Booth had referred to as the "very poor," and not at all with the masses at the present time. One of the very few statements as to the proportion of different classes that the historical investigator of these subjects met with, was by Mr. Gregory King about two hundred years ago. In describing the state of society in England at that time, he ventured to class very nearly one-half of the community as the "very poor," as being in a state of semi-pauperism, not earning enough for their own living, and being a cost to the remainder of the community. Matters were obviously different now as Mr. Booth's statement showed. If similar statements had been made with regard to different periods of English history, there would then be in the data which Mr. Booth had brought forward direct evidence as to what the progress of the different classes of the community had been between these periods and the present time. The greatest value should be attached to the kind of work Mr. Booth had been doing, for an analysis of the proportions which different classes bore to the whole community would throw a great deal of light on various social problems, and on the efforts which statesmen and politicians ought to make towards the improvement of different classes of society.

Mr. S. DANA HORTON having made a few remarks,

Sir RAWSON W. RAWSON desired to elicit the opinions of those who had lived in the East of London, and thoroughly understood the relations of one class to another there. The most striking conclusion of the paper was that the class which was most interested in the elimination of loafers and the elevation of the "very poor" was the industrious poor themselves. They suffered most by the existence of the class below them. They were not kept down from above, but they were dragged down from below. That was one of the most valuable lessons to be learned from the paper. He remembered when, fifty years ago, the Society was proud of collecting information with regard to 100 schools, or a population of 10,000, 20,000, or 30,000 persons, by the instrumentality of a committee of the Society; but now a single individual was collecting information with regard to 1 million. He ventured to say that if the Royal Statistical Society had not existed, Mr. Booth would scarcely have been emboldened or had courage to enter upon such a work. He scarcely knew of any work which would tend more to arousing sympathy and assistance for the classes who needed it, than that which Mr. Booth had initiated. He began last year with half a million; he had now added another half million. He had induced friends of his to embark upon a similar inquiry as to a third half million; and a gentleman in Manchester was ready to commence similar work among the population of that large city. It was to be hoped that this example would lead to the extension of inquiries throughout the whole kingdom, so as to bring into prominence the special features of our destitute population; and then could it be doubted that the result would be the discovery of some means of elevating them and reducing the distress which existed among this class throughout the country?

Mr. C. S. **Loch** said that the problem, as Mr. Booth had stated it statistically, appeared to be how 83 per cent. of the population could save or help the remaining 17 per cent.? On the face of it it was astonishing that so large a majority could not, to use Mr. Booth's phrase, improve the minority away. Another point was remarkable, the apparent lack of any relation between the pauperism and the poverty of a district. There seemed to be more pauperism in some districts where there was less poverty, and *vice versâ*. It was true that the function of the poor law was the relief of destitution, and that the task of prevention was in the main beyond it. It was for the most part alleviative and not reformatory. But if this were so, it showed how little merely alleviative relief had to do with the question. And the same argument would apply to charitable agencies so far as they were mere relief agencies. That seemed to him a fair deduction. If the remedy did not lie in relief, it would seem to lie in the self-helping agencies of practical school education and thrift; also probably in part in that organisation of leisure to which Mr. Booth had referred. If the 83 per cent. could get to understand this, a stride might be made in the reduction of the proportion of the "poor" and "very poor," so far as reform depended on outside and other class influences. He would not like to be thought a pessimist. An advance had certainly been made, owing in part to the fact that so many were considering the question. Mr. Booth had suggested what the proportions were, and had very skilfully drawn a moral, which he had not expressed.

Mr. J. K. **Lakeman** said that St. George's was the most poverty-stricken district in the East of London, and yet work appeared to be thriving there. The 51 per cent. "in comfort" was a thing worth noting. The question arose whether or not it was a fact that in St. George's early marriages were specially prevalent. He was given to understand that girls of 16 years of age were married to young men of the same age or a little older, or even if they were not married there was an increase in the population. The unions were over-burdened, and the rates handicapped in that one particular; and he had it from very strong authority, that in St. George's from that one source alone a great amount of destitution and poverty arose, with an accumulation of vice. It struck him as very peculiar that in St. George's where there were thriving and busy industries, docks, and ironworks, there should be 49 per cent. in poverty. Both in that parish and in Bethnal Green, Hackney, and Whitechapel, there were many questions to which philanthropists and persons in office might direct their attention, so that poverty and destitution might be removed.

Rev. F. LAWRENCE, Vicar of Westow, York, drew attention to the over-crowding in small country villages. If the result of Mr. Booth's investigations was that that subject was dealt with as well as the over-crowding in the East of London, much benefit would be conferred on the whole kingdom.

Mr. E. H. CARBUTT said that although there might be over-crowding in the country, yet the worthless ones there, those who had come to grief and lost their characters, came to London, where people could not find out who or what they were. It was a terrible thing to think that one-fourth of the whole population of London were verging on starvation. It had often been said that the cause of poverty among the poor was their poverty; that if they had not enough to live upon they were not able to work and cope with adversity. England had the advantage that food was cheap, and therefore ought not to have anything like the same proportion of poor as other countries where food was dear. Over and over again it had been proved that in coal getting the moment the amount of food for the working classes was increased they could work harder. The number of tons each collier could get had been increasing for years, owing to the cheapness of food. He was glad that Sir Rawson Rawson opened up the subject of the "very poor" dragging down the working class immediately above them. Instead of beginning among the lowest of the low, what was to be done was to raise up those just above them, and then the ambition would enter the minds of those below them to try and follow their example. One point which had struck him in the paper was "the value of the machine itself tends in the same direction. It is where machinery is most used that employment is most constant, and where it is least used that it is most precarious." That is very true. The moment a manufacturer spent money in machinery he was obliged to keep it going constantly, to make one class of machinery work in connection with another; and therefore he could not afford to take a man who was drunken and wasted time. That tended to regularity of employment, which was beneficial not only to the working classes themselves but to the whole nation. He agreed with Mr. Powell, who was connected with the Committee on Technical Education, that the working classes should be better taught to use their hands and eyes, so that if one trade failed they might be able to take up with some other trade. The great thing to be done in the first place was to secure better and cheaper houses for the working classes, and in the second place to see that they were better educated. It was only by discussing these matters, by everybody bringing forward the knowledge he possessed on one particular point, that a solution of the problem could be arrived at. He did not believe that charity would be the means of doing away with the evil. What was wanted was that the lower classes should become discontented with their position and set to work to improve it. If those who were "up" could be got to raise themselves a little bit higher, the consequence would be that those below them would follow in the same direction.

Mr. J. M. MATHIAS said he was a working man who had spent more than fifty years of his life in the Tower Hamlets, and he thanked Mr. Booth for his excellent paper, for it was evident that his sympathies were with the main body of the people. There were two causes of the present deplorable condition of the Tower Hamlets. Fifty years ago there were five large engineering factories in the East End of London, all of which were now closed. At that time 20,000 or 30,000 men and boys walked up and down Milwall morning and evening to and from their work; but now he calculated the number was not greater than 2,000 or 3,000. Another thing was that the oppressive coal duties had driven a great amount of work of every description into the provinces. If that tax were taken off it would make some thousands of pounds a-year difference to large employers, would lead to an increase of employment, and probably induce manufacturers to return to London. The working classes of the Tower Hamlets were much more mixed than in any other part of London. It was a very difficult thing to tell exactly what their condition was; but he thought Mr. Booth had rather understated the poverty which existed there. From his actual knowledge he believed that one out of every three was out of employment, or only getting partial employment. Machinery should have been a blessing to the community, but capitalists had pitted the machine against the man; and in many instances instead of being a blessing it had been a curse to the working classes. For instance, sewing machines had reduced the condition of the women and girls to a deplorable point. If a tax were placed upon machinery the proceeds might be utilised for the support of the unemployed. A registration bureau should also be established in every part of London, where working men could have their names registered with their business or trade, and where employers could go for men. It frequently happened that situations were missed because the men did not know that the employers wanted them. According to a statement made by the Rev. Mr. Solly at the Mansion House two or three years ago, 40,000 agricultural labourers came into London every year, and most of them remained and competed with the London labourers. This lowered the wages to starving point. There was also an influx of foreign Jews, who were driven from their own countries and came to London, expecting to pick up gold and silver in the streets. Not having a farthing in their pockets, they accepted the sweater's wages, and honest, industrious English men and women were driven out of the field; and these two evils led to overcrowding. The Tower Hamlets received the pauperism of the country and the pauperism from abroad also. As one of the working class he expressed, on behalf of his fellow workmen and himself, his heartfelt thanks to Mr. Booth for his able paper.

Mr. T. E. Kerrigan drew attention to the paragraph in the paper which said: "The poverty of the poor is mainly the result of the competition of the very poor. The entire removal of this class out of the daily struggle for existence I believe to be the only solution of the problem of poverty. Is this solution beyond our reach?" That question lay at the very foundation of the whole matter. On one of the most miserable days of the winter before last, being deeply impressed with the poverty that surrounded him in the East End, he found that men were wanted for a job at Dalston, where they would be paid 5*d.* per hour. He went to three centres where he knew men would be congregated out of employment, but not one would accept the offer, all of them assigning as a reason for their refusal that it was too far to go, though it was only about 2½ miles. He could quite confirm what Mr. Booth had said: "The hordes of barbarians of whom we have heard, who, coming forth from the slums, will one day overwhelm civilisation, do not exist." It was a wild notion with whomsoever it originated. He had been in the very slums of Japan and China, but he could honestly say that for downright outrageous laziness, that of the "loafer" portion of the East End of London exceeded every other part of the globe.

Mr. F. S. Powell, M.P., said he had been greatly pleased to hear Mr. Mathias's remarks about the coal tax. That tax would very shortly be a thing of the past. He was, however, surprised to hear that machinery had been an injury to the working classes. He was totally unaware how the coal of Lancashire and Yorkshire could be brought to London except by the aid of machinery. It was machinery that raised the coal and took it by rail or sea to the metropolis. And not only so, but it was the machine which made the machine, and it was owing to the marvellous machinery of our workshops, that locomotive engines and steamers could be built. He was old enough to remember when in Lancashire and Yorkshire terrible agony was produced by the invention of the power loom and the combing machine; but after the lapse of a few years it was found that those two machines brought infinite comfort and plenty to the working classes. He certainly regretted that any working man should speak in disparagement of machinery. The whole world had benefited by it, and no class more than the working class. Where would their earnings be if the machines of Lancashire and Yorkshire were stopped? He wished to draw attention to the reassuring and encouraging character of the paper. The object of the Statistical Society was to investigate facts, to discover and circulate the truth, and it was a source of great consolation to those whose lives were spent in the work of social reform to find that although they had a great deal to lament there was not so much ground for lamentation as for taking good hope and being courageous. Mr. Booth's paper taught the same lesson as some other investigations, that in our present social system there was a firm and solid foundation of that which was good, and that that which was evil was less in proportion than some thought. The influences for good were daily increasing, while the influences for evil were daily diminishing.

Mr. D. F. SCHLOSS said there was one thing he should like to point out with regard to the effect of machinery. The value of the machine itself tended towards regularity of employment if it belonged to a large employer who maintained a proper factory, but for some reason or other the factory system seemed unable to take root in the East of London. The consequence was that the work was given out to contractors and sub-contractors, who owned the machines. A large number of the wholesale boot manufacturers there did not even own a sole-sewing machine. If they did they would try to keep it regularly going throughout the year. Little men in little houses owned the machines, and the result was they were idle for a great part of the year. It was to be hoped that the benefit machinery could confer would be secured by the extension of the Factory Acts. Every one who knew Mr. Lakeman was aware how jealous he was in his immense district, but he had stated in his last report that in the majority of the sweaters' dens the factory inspector was powerless. Power should be given to inspect the small workshops, and in very many cases to inspect them out of existence. If the factory system could be introduced, and not otherwise, the introduction of machinery would bring with it the benefits of regularity of employment. The unique merit of Mr. Booth's work was its large mindedness, its universal grasp of all the conditions of existence in those districts. A great deal had been heard of late about the "very poor," about whom, indeed, we could not hear too much, but something should be also heard about the "poor," and those just above them. Much was said about those who had failed, but it was desirable to know something about those who had succeeded, and why they had done so.

Mrs. AMIE HICKS thought that if Mr. Kerrigan had visited the houses of the poor instead of applying to groups of men in the street, he would have found plenty who were ready to work, and who would have been thankful for the offer. In the parish of St. Pancras 60 men were found daily who were willing to do the hard work of breaking 10 bushels of stone in eight hours, the highest wage being for married men with families 10*d.* and two 4 lb. loaves per day. The winter before last a house to house visitation was made in the north-west district of London, and in 60 streets 1,300 men were found to have been out of employment for at least a month. Each of those men represented a distinct family, which probably averaged six persons, so that there were 7,800 human beings on the verge of starvation.

Mr. **Charles Booth**, in reply, said he hardly knew how to express his sense of the kind reception he had had; but he wished especially to thank Sir Rawson Rawson and Mr. Giffen for the extremely kind way in which they had spoken of such services as he had been able to render. The method he had adopted of laying the results of his work before the Society from time to time had great advantages for him, for he had gained enormously by each discussion. The paper he had read was a mere skeleton; the flesh and blood had yet to be added. He was thankful to say that he was now getting the co-operation of others in the work, and he hoped that by their assistance a solid value would be given to it. His own work was simply a large foundation on which the building had yet to be erected. When he thought of the East End of London he was perfectly bewildered by its immensity, and he felt that he knew absolutely nothing about it. It was only very slowly, and by combined efforts of all kinds, that anything like completeness could be given to the inquiries. Many extremely interesting questions had been suggested by the different speakers. If he did not at present deal with the points raised by Mr. Mathias and others, it must not be thought that he was shirking them, for he would deal with them as well as he could later on. He neither agreed nor disagreed; he waited. He did not wish to blame or attack anyone, not even that small class who had been called "barbarians." He had used the word in the sense in which it was used by Henry George, who brought forward the simile of the overthrow of the Roman civilisation by the "barbarians." The possibility of a revolution caused by the pressure of hunger, suggested by Mrs. Hicks, was quite a different idea; there was no danger of the kind at present. In the book which he hoped would be published at the end of this year, of which he would be editor, and to which there would be several able contributors, he hoped that the other points which had been raised in the discussion would be dealt with.

The **Chairman** said he was sure that the meeting would cordially thank Mr. Booth for the able and interesting paper he had read, the preparation of which must have cost him an immense amount of labour.

MISCELLANEA.

CONTENTS:

	PAGE
I.—Professor Leone Levi, LL.D.	340
II.—Dr. F. X. von Neumann-Spallart	343
III.—Some New Methods of Measuring Variation in General Prices. By F. Y. Edgeworth, Esq., M.A.	346
IV.—Emigration and Immigration in the Year 1887	368
V.—Relative Advantages of the Railways and Waterways of Germany. (A translation)	375
VI.—Statistics of the Russian Empire	396
VII.—Notes on Economical and Statistical Works	398
VIII.—Quarterly List of Additions to the Library	414

I.—*Professor Leone Levi, LL.D.*

At a Meeting of the Council of the Royal Statistical Society, held on the 10th May, 1888, Dr. T. Graham Balfour, F.R.S., a Vice-President in the chair, it was resolved:—

"That the Society desires to record its deep regret at the loss it has sustained by the death of

Professor Leone Levi, LL.D., F.S.A., &c.,

who at the time of his decease was a Member of the Council and also a Member of the Library Committee and the Census 1891 Committee; and whose services to the Society have extended over an uninterrupted period of thirty-seven years.

"Professor Levi was a liberal donor to the library, and has read sixteen papers to the Society on different subjects. He has represented the Society as a Delegate at various meetings of the International Statistical Congress, the British Association and the Social Science Association. He also served on several committees in former years, and was chosen to be a Vice-President of the Society in 1885."

It was also resolved:—"That a letter of condolence on the part of the Council be addressed to Professor Leone Levi's widow."

The remarks of the Chairman of the Ordinary Meeting on the 15th May (Dr. T. Graham Balfour, F.R.S.), in announcing Professor Leone Levi's death, will be found at p. 332 of the present number of the *Journal*.

The following notice of the death of Professor Leone Levi appeared in the *Saturday Review* of the 12th of May:—

"It seems a strange thing that English Chambers of Commerce should have lost their father only this week, and that he should have been an Italian. Such, however, are the facts, and they ought to ensure for Mr. Leone Levi a niche in the fabric of industrial history. Mr. Levi was a man of immense diligence, transparent integrity, and conspicuous public spirit. But his labours were not of the class which brings popular applause to the labourer, and it must be admitted that he had not the gift of making dry subjects attractive. His solid achievements in commercial and international law are recognised and admired by all competent critics. Work of this sort, however, is peculiarly impersonal; and the very people who profit most by it care little who did it, so long as it is done. Leone Levi was born in 1821 at Ancona, then in the Papal States, just forty years before the town and province of that name became part of the kingdom of Italy. Like Mr. Gallenga and Sir James Lacaita, he was a naturalised British subject, though he did not, like Sir James, continue to be also an Italian senator. He left Italy for England when he was 23 years old, and made this country his home for the remainder of his life. For some time he resided in Liverpool, and in 1849 the Liverpool Chamber of Commerce was established at his suggestion. It is needless to say that almost every important town in England now contains a body of this description, even London having condescended a few years ago to follow the universal practice. The kindred project which Mr. Levi advocated at the same time has not been equally successful. Chambers of Commerce are thoroughly useful and practical institutions. Tribunals of commerce have, speaking generally, failed. Merchants prefer, as a rule, a court of law, or an arbitration conducted under the supervision of the court. It was formerly stated that the best commercial tribunal was a strong judge sitting with a special jury of the City of London. Perhaps neither special juries nor puisne judges are what they were, since Parliament lowered the qualification for the one, and the Court of Appeal skimmed the cream of the other. But men of business still prefer the administration of the ordinary law to those boards of mercantile specialists with which the late Serjeant Cox wanted to fill Serjeants' Inn. Mr. Levi became himself secretary of the Liverpool Chamber, and in that character was enabled to procure information with regard to the working of similar institutions abroad. This led him to publish in 1850 his *Commercial Law of the World*, or, as it was called in the second edition of 1873, *International Commercial Law.* This book made Mr. Levi's reputation as an authority in those pursuits for which his countrymen have always been famous, and obtained for him various prizes and medals. The International and Commercial Code, for which he pleaded with such vigorous earnestness, is still a thing of the future. But there can be no doubt that the greater similarity of usage which now prevails in business relations throughout the civilised world is largely due to his untiring exertions, and to the lucid reasoning by which he supported his ideas.

"Leone Levi, who died on Tuesday last, in his sixty-seventh year, was appointed in 1852 Professor of Commercial Law at King's College, London. In 1859 he was called to the Bar at Lincoln's Inn, and his cheerful, bustling little figure was familiar to all members of the Inn who were in the habit of dining in Hall. He had been out of health for some time before his death, and he might probably have lived longer if he had worked less hard. Mr. Gladstone said of Bishop Wilberforce that he had only one fault—he could not rest. Professor Leone Levi was almost always engaged on some task which would have been too stiff and uninviting for ordinary minds. Apart from his knowledge of law and commerce, which he combined after the fashion, though not of course with the genius, of Lord Mansfield, Professor Levi was a sound and accomplished economist. A free-trader by conviction, he did not content himself with arguing against protection on abstract grounds, but collected a large mass of statistics to show that his logic was based on truth. With the exception of Mr. Robert Giffen, he was probably the greatest statistician in the United Kingdom, and at most meetings of the British Association he had valuable calculations to communicate. His numerous letters to the *Times* on financial and commercial subjects were apt to repel the ordinary reader by the columns of figures with which they were loaded. But, though he had little or no literary faculty, and never acquired a mastery of the English language like Mr. Max Müller, his meaning was clear, and the ciphers had a definite purpose of their own. His *History of British Commerce and of the Economic Progress of the British Nation from* 1863 to 1878 is a standard work of acknowledged value, and the University of Tübingen conferred on him the high honour of a doctor's degree in Economic Science. The important legislation of 1856, which did much to assimilate the mercantile law of the three kingdoms, was sketched out and initiated by him. He proposed the summoning of a conference on the subject, at which the late Lord Harrowby and the first Lord Brougham presided. Among the results of this meeting were two Acts of Parliament, one to alter the commercial law of Scotland, the other to modify the Scotch law of marriage. The latter, however, still continues to vex the soul of the scientific legislator and to provide material for the pen of the imaginative novelist. It is characteristic of Professor Levi that he should have founded a lectureship in his native town of Ancona, and that he should have chosen as its subject, 'the laws of commerce in relation to science and moral international laws.' He believed devoutly in the scientific nature of law, even of international law, which he was appropriately selected to treat in the 'International Scientific Series.' Mr. Whitmore rather wittily said of Professor Stuart the other day that his whole life was one long public meeting. Professor Levi's life was a series of lectures, diversified by treatises, or of treatises diversified by lectures. Such a career does not invite the effusive eloquence of the enthusiastic economiast. But it would be a great mistake to underrate the labours of men like Leone Levi, who not only add much to the sum of positive knowledge, but also mitigate the disputes and jealousies of nations."

II.—*Dr. F. X. von Neumann-Spallart.*

The following is a translation of an obituary notice of the late Dr. von Neumann-Spallart, which appeared in a supplement to the 14th volume of the Austrian *Statistische Monatschrift.* Dr. von Neumann-Spallart, who was an Honorary Fellow of the Royal Statistical Society, died on the 19th April last:—

Through the premature death of Councillor and Professor Dr. F. X. von Neumann-Spallart, the Central Statistical Commission has suffered a very heavy loss. The great and untiring energy with which during the sixteen years of his membership of the Commission he devoted himself to its work, and the practical knowledge and foresight which he brought to bear in the performance of his numerous and arduous duties, secure for him a grateful and honoured remembrance.

The youngest son of a well known and highly esteemed magistrate at Vienna, where he was born on the 11th November, 1837, Neumann-Spallart enjoyed the advantages of a liberal education. He completed his legal and economic studies at the Vienna University in 1859, received the degree of Doctor of Laws in 1862, and then started on a journey through Germany, England, Belgium, Holland, and France, with the object of obtaining information as to the various phases of public life, and particularly as to the economic life of nations. He formed on this journey many personal connections, acquaintances which he improved in the course of later international transactions.

In 1864 he succeeded Adolph Wagner as Professor of Political Economy at the Vienna Commercial Academy, and in 1868 he obtained a similar professorship at the Imperial Military College. In 1871 he was appointed to the honorary professorship of Popular Economy at the Vienna University, and in the following year, on the establishment of an Agricultural College, he was appointed Professor of Economy and Statistics, obtaining at the same time the title of Councillor. In 1881 he was honoured with the rank of Imperial Councillor, and in 1883, in addition to his duties as Professor of Agriculture at the Agricultural College, he lectured on Statistics at the University, after which he acted as Professor of Statistics at the Imperial Oriental Academy, which position he filled up to the time of his death.

Von Neumann-Spallart however developed a considerable talent for subjects other than those strictly professorial. He took an active part in the preliminary transactions of the Imperial Ministry of Commerce preparatory to the conclusion of the commercial treaties with Germany and Great Britain in 1865. In 1867 he was a member of the Austrian Exhibition Commission at the International Exhibition held in Paris, and edited the well known *Austrian Report on Exhibitions*, a work consisting of six volumes. In 1869 he represented Austria as delegate at the opening of the Suez Canal. In 1873 he took an active part in organising the Vienna International Exhibition, acting meanwhile as editor of the *Exhibition Gazette*, conducted by the *Neue Freie Presse*. The Crown Prince Rudolph selected him to assist him in his *Osterreich Ungarn in Wort und Bild*, a work in which he took an active interest until his death. He was also connected with the practical work of commercial life, as member of the Administrative Council of the State Railways, and as director of a large manufacturing company. At the same time he devoted his energies to humane societies, particularly to the society for the relief of invalid students of the Vienna High Schools, a society which in a great measure owes its success and prosperity to him.

In the present circumstances we must not omit a grateful recognition of his valuable services to the Statistical Central Commission. Appointed an honorary member in 1871, he took an active share in the preparation of the census returns, and of the statistics relating to the movement of the population, as well as in moral and commercial statistics. In 1877-80 he acted as joint editor of the *Statistische Monatschrift.* In 1876 he was a delegate of the Central Commission at the Ninth International Statistical Congress at Budapest; in 1878 he was sole representative at the Permanent Commission at Paris, and in 1885 in conjunction with President von Inama Sternegg he acted as representative at the Jubilees of the Paris Statistical Society and of the Royal Statistical Society of London. At the latter he took a most active part in the foundation of the Imperial Statistical Institute, the regulations of which he drew up, and when, in the spring of 1887, this Society met for the first time at Rome and elected him as Second Vice President, he did not hesitate, notwithstanding the precarious state of his health, to attend and take an active part in its work. It was while engaged at his favourite labours on international statistics, that he was struck down in the midst of his career of public usefulness.

The papers which he read at Rome on the method of estimating a nation's well being, a subject to which he had devoted considerable time and attention, and which he had much at heart, constituted the last work on which he was engaged. A chronic and incurable chest complaint was even then slowly but surely terminating this useful life.

As a political economist Neumann-Spallart was educated in the free trade principles, which during the time of his studies dominated both the literary and academical world. He devoted himself fearlessly to these principles, and it was in this spirit that he wrote his treatises on *Austrian Commercial Policy*, and assisted in the foundation of the Society for Promoting National Economy in Vienna; his election as a member of the Cobden Club shows to what extent his abilities were recognised outside his own country. He soon commenced to direct his attention to the observation of actual results as they occurred in the commercial and social relations of nations, and was liberal minded enough not only to realise to how great an extent actual social requirements differed from what they are theoretically represented to be, but to bring the result of his observations into a definite and intelligible shape. Powerfully attracted by Quetelet's genial method of treating statistics, we now find him following in his footsteps, on the one hand in his moral statistical researches, and on the other in his careful analysis of events in the wide area of the world's economy.

The systematic manner in which he, assisted by the economic literature of the world, and supported by numerous contributions from official statistical bureaux, as well as from his colleagues in other countries, since 1870 followed the various social phenomena in matters relating to population, production, and commerce, and from year to year endeavoured to more thoroughly arrange and classify them as primary, secondary, and reflective symptoms of the social conditions of the world, and from this arrangement to frame a circumspect and carefully considered prognostication of the immediate future, is a work deserving of the highest praise. This work, embodied in his *Uebersichten der Weltwirthschaft*, has not only earned for him the gratitude of political economists and statisticians, but has been instrumental in the dissemination of a knowledge of the intricacies of social phenomena to the most remote quarters of the civilised world, and has been most effectual in smoothing the way for forming a true appreciation of the importance of these phenomena. A continuation of this publication will be felt as a universal want, and would constitute an act of reverence and gratitude on the part of national economists and statisticians to their distinguished colleague who has been so prematurely removed from among them.

Neumann-Spallart's distinguished services were not unrequited so far as honours and distinctions are concerned. He was Knight of the Tuscan Order of Merit, Commander of the Persian Order of the Sun and Lion, Commander of the Italian Order of the Crown, Knight of the Prussian Order of the Crown of the 3rd Class, Knight of the Ludwig Order of the Duchy of Hesse, and Officer of Public Instruction. He was also a member of the following learned and scientific societies: The Oriental Museum, The Trade Society of Lower Austria, The Paris Statistical Society, The Royal Statistical Society of London, The Cobden Club, The Academy of Sciences, St. Petersburg, &c.

Of Dr. Neumann-Spallart's numerous works, some of which have appeared independently and some as treatises in Hildebrand's *Yearbooks of Political Economy and Statistics*, as well as in the *Austrian Review*, the *Deutsche Rundschau*, *Unsere Zeit*, Meyers's *Yearbook*, &c., the following deserve special mention:—

Austrian Commercial Policy in the Past, Present, and Future. Vienna, 1864.

Agricultural Credit. Vienna, 1865.

Civilisation and Economic Progress. Vienna, 1869.

Political Economy and the Army. Vienna, 1869.

The Science of Political Economy specially applied to the Army. Vienna, 1873.

Art in Economics. Vienna, 1873.

Increase in Prices of the Necessaries of Life. Berlin, 1874.

The Harvests and National Prosperity in Austria-Hungary. Berlin, 1874.

Protection in the World's Industries. Berlin, 1879.

Austrian Elections, 1879. (Jointly with G. A. Schimmer.) Stuttgart, 1880.

Austrian Maritime Development and the Advancement of Trade. Stuttgart, 1882.

Social Physiological Treatise. Berlin, 1882.

The Disturbance of the Economic Equilibrium. Berlin, 1884.

Review of the World's Progress in Trade and Industry, 1870, 1872, 1874, 1876, in Behm's *Geographical Yearbook*, 1878, 1879, 1880, 1881-82, 1883-84. Stuttgart.

General Political Economical Summaries in His Imperial Highness the Crown Prince Rudolph's Work.

The *Austrian Statistische Monatschrift*, in its fourteen annual volumes, comprises the following more important treatises of Neumann-Spallart:—

First year, 1875. "Over Speculation in International Commerce. The Harvests of Austria-Hungary in the year 1874."

Third year, 1877. "General Statistics of the Empire. Production of Grain in Austria and other Countries."

Fourth year, 1878. "Sociology and Statistics. Statistics of the Precious Metals and the Necessity for Reform."

Fifth year, 1878. "Census of the year 1880."

Seventh year, 1880. "Suicides." A critical review.

Ninth year, 1882. "Value of the Grain Products of Austria-Hungary."

In addition to the above, about seventy smaller notices and reviews have been published by Dr. von Neumann-Spallart from time to time.

III.—*Some New Methods of Measuring Variation in General Prices.*

By F. Y. EDGEWORTH, M.A., F.S.S.

CONTENTS:

PAGE
The Variation of Prices here measured is not that which is defined by the Special Interest of Consumers 347
Or of Producers 348
But more objective, adapted to the General Purposes of Science 348
I. Preliminary View of the Phenomena under Measurement 348
Variation of General Prices implies *primâ facie* a Sporadic Dispersion of Change 349
Variation in Prices cannot express Change in the Quantity of Gold (relative to its work), unless we take an average extending over several years 350
But in a Period of Years there will have occurred Progressive or *Secular* Variations of "other things;" which kind of Variations can neither be averaged away, nor allowed for 350
II. Divisions and description of the Problem 351
(1.) To ascertain a Mean Variation of General Prices as a mere fact, it is not necessary to show a Fall (or Rise) in each Article 352
Nor that we should be unable to assign special reasons accounting for each particular variation 353
There is only one Postulate 354
Which is fairly well fulfilled 355

CONTENTS—*Contd.*

PAGE
(2.) To ascertain Variation of Prices as the Measure of the Change in the Quantity of Gold (relatively to the work it has to do), there are two sets of operations necessary; to allow for the change in the volume of Transactions and the *secular* Variation in the Organisation of Credit and the rapidity of Circulation: to solve the Statistical Problem to which by these corrections the investigation is reduced 355
III. Determination of the proper species of Average 356
(1.) The general presumption in favour of the Arithmetic Mean may be overridden by the tendency of Prices to Rise extravagantly 356
The remedies are (*a*) The Geometric Mean; which is not sufficiently drastic 356
(*β*) Modes of smoothing the given Groups of Observations into a Sweeping Curve; which methods are open to objections 357
(*γ*) The Median; which species of Average without manipulation secures that particular high prices, like *Cotton* and *Tobacco* in 1862-65, should not unduly impress their individuality on the general result 360
The Median is specially adapted to three sorts of Grouping 362
Which seem to be actually presented by the Statistics of Prices 362
Methods of Weighting the Median 363
(2.) The average proper to the Problem in its second phase is the Weighted Mean of the kind employed by Mr. Palgrave 365
The *Weights* should be proportional to the Total Value of each Article; with a correction, if possible, for the circumstance that transactions of different natures put in use different quantities of currency (to the same volume of trade) 366
How far Sporadic Dispersion of Change is essential to the solution 367

It is related of a cautious thinker, that he refused his assent to some mathematical axiom, until informed what use would be made of the proposition. His hesitation would not have been altogether unreasonable, if it had related to that branch of mathematics which may be called the *Theory of Averages*. The answer to the question what is the *Mean* of a given set of magnitudes cannot in general be found, unless there is given also the object for the sake of which a mean value is required.[1] There are as many kinds of average as there are purposes; and we may almost say in the matter of prices as many purposes as writers. Hence much vain controversy between persons who are literally at cross purposes. To use a metaphor which has been applied to metaphysics, one party makes a good stroke at billiards, and thinks he has scored off another who is playing chess.

One of the most distinct objects which can be proposed as the scope of this inquiry is the varying value of the set of articles consumed by the average man in the community. This aspect of the problem has been considered by me elsewhere; summarily in a former number of this *Journal*,[2] and more fully in a memorandum published in the report of the British Association for 1887.[3]

Again we may look at the change in general prices from the producer's, rather than the consumer's point of view. Take for example the state of things in Java according to Professor Greven.

---

[1] See this doctrine well stated in the concluding sections of Dr. Venn's *Logic of Chance.* 3rd edit.

[2] 1883, p. 714.

[3] Under the heading A, B, C.

" The producers of coffee, sugar, and other tropical products, "sell for diminished prices, while much of the burden on their estates and manufactories, in so far as they are working with borrowed capital remains the same." We might measure the variation in general prices by the average diminution in the gross income of these producers. This variety of the problem has also been discussed by me elsewhere,[4] and is here noticed only to be dismissed.

The part of the subject to which it is here intended to apply fresh treatment, is the more impersonal and objective side, related not so much to any special interest, as to the general purposes of monetary science.[5] The treatment is likely to be more serviceable, if I first attempt to diagnose the case. Accordingly I shall (I) endeavour to attain an appropriate general conception of the phenomenon under consideration, the variation of prices together with its causes. Next (II) I propose to indicate the several statistical aspects, the different features admitting of measurement, which the phenomenon itself, or the cause of which it is the expression, may present. Only after these preliminary inquiries shall I (III) approach the special subject of this paper: to determine the kind of average proper to each of the measurements which may be proposed.

I. A first approximation to a correct view concerning the cause of variations in general prices is afforded by the abstract proposition that the value of (legal-tender, standard) money varies in inverse proportion to its quantity. This is the general conception which first occurs to the unprejudiced mind, and most impresses the scientific imagination.[6] This rule and its exceptions might be illustrated thus: Let us figure the currency as the currents of a system of canals or lagoons communicating with each other.[7] The section of each channel is perfectly regular; and the depth of all is initially the same, say 100 inches. Now, if the mass of fluid in the system be increased in any ratio, the height of all the channels will be increased in the same ratio (and *vice versâ*); other things being the same. But other things do not remain the same, and we must now complicate this primary conception by the addition of many modifying attributes.

(1.) Let us regard the work of transportation performed by our currents as proportional to the area of the canals. If now this area is liable to be extended, we must modify our leading proposition by reading, instead of increase of fluid *simpliciter*, increase relatively to extent per unit area.

---

[4] Memorandum (British Association, 1887), heading A, B, c.

[5] *Cf.* Memorandum, heading a.

[6] In thus fixing upon *quantity* as the essential attribute, I should like to guard myself by the remark that in abstract reasoning there is generally something arbitrary in choosing which attribute we are to attend to, and which to abstract. Thus it is allowable, with Ricardo, to regard rent as varying with *fertility*, distance and other things being the same; or with Von Thunen to attend to *distance* as the prime variable. Because Ricardo is right, Von Thunen is not wrong. Similarly there are those who prefer to regard it as the rule, not the exception, that prices vary with the state of credit; quantity of legal tender money being placed among the other things which must be supposed equal.

[7] This initially equal depth corresponds to the 100 from which in the construction of an index number all the prices start.

(2.) We have next to take into account that the depths of the canals are liable to proper disturbances. The validity of the theory need not be destroyed by these, if they are sufficiently *sporadic*. One interesting case, pointed out by Professor Nicholson, is when the depth of some parts of the system is diminished, while the extent of others, and, along with their extent, their depth, is increased. As he intimates, it must be postulated that such disturbances may be neglected as mutually compensatory.

(3.) We have so far supposed our system to be perfectly permeable. But now let us conceive that some parts have been isolated; and that, coincidently with the influx of additional fluid, the insulating barriers are broken down. The consequence of the influx could hardly be regarded as an increase of depth all round. Some of the canals might be actually shallower in the last state than in the first. But here, as throughout this problem, a good deal turns upon the *sporadic* character of the phenomena. For instance, the theory might still hold if we could break up the whole extent of our system into a number of partial areas, presenting a rise upon an average.

(4.) So far our money-fluid has been supposed homogeneous. But now—corresponding to the distinction between legal-tender money and credit—the sea-water in our lagoons is to be distinguished from the added volume of liquid contributed by springs and rains. The brackish mixture behaves like the salt element, both in performing the work of transportation, and in constantly tending to a level. The only difference between the constituent elements is that the one has what the other has not, an intrinsic mineral that savours it. Old fashioned people are apt to imagine that the lagoons—as in primitive conditions of commerce was the case—are full of sea-water. But the fact is in the modern system that the proportion of sea-water is extremely small, from 1 to 10 per cent. it may be. This proportion is extremely variable, owing to the freshwater element varying in volume from causes not affecting the other element. Its volume is now swollen by genial rains; now shrunk by deadly droughts, independently and irrespectively of the sea tides.

We may distinguish two species of variation in the proportion between the elements; the one periodical or occasional, the other secular or progressive. Assimilating days to years and seasons to centuries, we might compare the former change to the vicissitudes from day to day of rainfall and the height of streams; while the other change is like the steady increase of the average rainfall with the progress of the year (at certain seasons). The former oscillations are so violent as entirely to mask the effect of changes from day to day in the volume of sea-water. We could only hope to detect that influence upon an average extending over a long time. But then occurs the difficulty that, if we suppose some time to elapse, we must suppose a change of the kind which we have called secular in the (coefficient representing) proportion between the elements. Let it be granted that there is in the sluices of our system an arrangement such that the increase of the sea water tends to be accompanied with a *proportional* increase of fresh water (and so a proportional increase of the average depth of the lagoons). But this relation can only be verified by an average extending over some time. And the verification is nullified, because in that time there will have occurred an *unknown*[8] variation, in a certain coefficient, which for the purpose of statistical reasoning must be supposed constant, or at least to admit of measurement.[9]

(5.) We have said little about the mode in which the transportation of goods is effected. It is indeed peculiar, since we must suppose the barges which are transmitted through the channels to move *up stream.* (We might conceive the currents in some way doing work in a sort of mills by which from lock to lock the cargoes of commerce are transported. But the only point we need attend to is that the amount of work done by the currents varies with their rapidity. Now there is reason to think that the rapidity of circulation has (in addition to periodic oscillations) a secular[10] progress. Here then is another *unknown* coefficient which stultifies the statistical verification of the theory.

(6.) There are some other minor modifications. For instance goods, which used to be transmitted *viâ* money currents, may come to be transmitted by the plain high-road of barter. But enough has been indicated for the purpose of obtaining a distinct view of the problems designated by our title.

---

[8] That we know the *direction* of this coefficient's variation (namely increase, in modern times) is I think in some respects less favourable to calculation than a total ignorance which would allow us to treat the direction as fortuitous; as I think we may treat the effect of the circumstances noticed under headings (2) and (3). For in the latter case the Quantity-theory may really be regarded as absolutely true, on an average and in the long run. But we must remember that what is true only of the long run is apt not to be serviceable on a particular occasion. Suppose a savant could calculate from the earth's motion and other constants that the third or fourth week in December tended to be in England two degrees colder than the first week. And we may suppose also that the proposition is actually verified by averaging the respective mean weekly temperatures for a hundred years. What should we think of a weather prophet who, if the mean temperature of the first week for 1888 is just 32° (Fahr.), shall announce confidently that there will be ice in the later week? What of the general who staked the success of a campaign on that expectation? Yet this is the spirit in which Professor Walras proposes to apply the Quantity-theory. It is well to speak of averaging away the oscillations of credit. But how if the "period" selected be like our December week, not long enough to get rid of *all* the oscillations which mask the abstract theory? *A fortiori,* if the proportion between credit and hard cash transactions —divested of the sharp, the so-called decennial, fluctuations—is not according to the supposition just entertained *slowly oscillatory,* but, as there is reason to believe, *secularly progressive.*

[9] For some further modifications of the theory under this head, and for references see the memorandum contributed by the writer to the *Precious Metals* Commission, 1888. I have dwelt there more than seems necessary here, on the fact, or presumption, that the proportion between credit and hard cash transactions varies, not merely *independently* of the quantity of money, but even in a sense *repugnant* to the Quantity theory: in such wise as to keep the level of prices constant. On this important topic Naasse in the *Zeitung f. Gessammt. Wissenschaft* (vol. xxi) and in later writings, is to be added as a weighty authority.

[10] Ibid.

II. Contemplating the ebb and flow of metallic currency, the surging mass of fiduciary circulation, and the ever shifting channels of commerce, we have now to consider, in this universal flux, what definite object, what measurable constant, is presented to the statistician. There seem to be in the main two objects, corresponding to two problems distinguished by Mr. Giffen in his classical paper on The Depreciation of Gold.[11] The first *quæsitum* is the mean variation of prices *simpliciter* and *per se*, the mere fact abstracted from any hypothesis as to its cause.[12] The second *quæsitum* is the mean variation of prices considered as the expression and measure of the change in the volume of standard currency relative to the work which it has to do.[13] A few words on each of the inquiries thus distinguished.

(1.) How are we to conceive mean variation in an absolute sense; apart from the particular purposes which have been already dismissed, and the special assumptions which are to be considered hereafter? If we assume the grouping of the statistics to be symmetrical, then the *quæsitum* may be defined as that point, or number, which would be the central one, if we prolonged indefinitely the series of returns. But, if the curve which represents the grouping is not symmetrical, then I think the *quæsitum* can only or may best be conceived as the *greatest ordinate* of that curve,[14] the centre of closest grouping, *der dichteste Werth* in the apt phrase of Fechner. Now it has been shown by me[15] that price returns do very generally group themselves asymmetrically as in the annexed figure. The *quæsitum* then is the position of the greatest ordinate, the point O. That is, not so much the O which appertains to the given set of figures, as that centre of condensation which would be presented, if we could complete the series of which the given returns are regarded as specimens or samples. This definition covers the case of symmetry. For in that case the greatest ordinate (of the completed curve) coincides with the centre of symmetry.

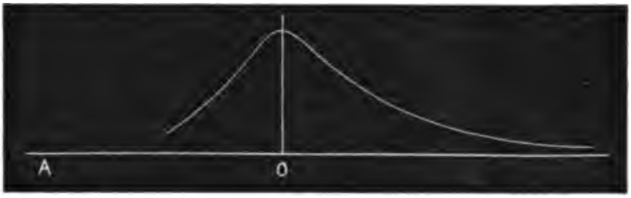


FIG. 1.

---

[11] *Essays in Finance*, Series I. Essay II, Introduction. The first problem is the subject of Section VIII and the first part of Section IX of my Memorandum; the second problem is noticed in the latter part of Section IX.

[12] *Cf.* Jevons's *Serious Fall.* "The preceding parts of this inquiry are independent of any assumption as to the cause of the fall in the value of gold. I consider that I have simply established the fact of an alteration."

[13] Mr. Giffen's problem is the converse of this, viz., to find the change in the relative volume of currency as the measure of the fall in general prices.

[14] See the chapters on the Theory of Averages in Dr. Venn's *Logic of Chance.*

[15] Memorandum, British Association, 1887. Section VIII.

It may be asked what does the point O, or rather its distance from a fixed point A, what does the line AO, represent? I answer, it need not represent anything; any more than the mean height of a nation is the likeness of anything in heaven or earth or the waters under the earth. At the same time we are not prevented from entertaining even in this section the possibility that our result is the measure of a real thing; just as much as the mean of a set of astronomical observations represents a real thing, *e.g.*, the position of a star. Or the case may be intermediate between these two. For theorists have too sharply divided averages or means into those which are objective or related to real things, and those which are fictitious or subjective.[16] There is a large category "between genuine being and not being," as Plato would say. Very often the average is not merely a type, nor yet clearly a thing. It is a muffled or masked representation of some real entity. It is known to be a function, but it is not a known function, of an objective magnitude.[17]

Consider for example one of Professor Nicholson's happy illustrations. A set of prices subject at once to "to causes operating on all commodities whatever" (as Mill has it), and causes proper to each in particular may be compared to a fleet of racing yachts, which, under the influence of a common cause, it may be rising wind or tide, are variously accelerated according to the "build of the various yachts or seamanship of the crews." Suppose now we find the average acceleration of the vessels. That result does not enable us to calculate the rise of wind or tide or both—at least without more knowledge of hydromechanics and seamanship than the present writer or perhaps the reader possesses. I am tolerably certain that to every increment of the wind's velocity there corresponds (in the absence of counteracting causes) an increment of the average ship's speed. But I cannot even conjecture how much the velocity of the wind would have to be increased, in order to increase a given speed of the ship by 25 or 50 per cent.[18] Variation in the effect indicates, but does not measure, variation in the cause.

Having defined what is sought we are able to discern what is postulated by our problem. It is not necessary, in order to prove a fall in general prices, that we should be given a fall of each particular price. I venture to think that this assumption, though made by very high authorities,[19] betrays some misconception of the problem. For the *quæsitum* is of the nature of what Mill calls a "residual phenomenon;" which he illustrates by the "diurnal variation" of the barometric height, detected by taking an average over several days. As Mill says, this variation "is very small compared with the variations arising from the irregular changes in the state of the atmosphere."[20] Let the point O in the annexed figure correspond to the mean height of the barometer at 9 p.m., as fixed by an average extending over a very great number of days. Let the ordinate xy represent the number of days on which the height at 4 p.m., exceed AO (the height at 9 a.m.) by Ox. Then the observations being sufficiently numerous, we may determine that the mean height at 4 p.m. is less than the mean height at 9 a.m. by the little difference OO′; *although a large minority of days show excess instead of defect.* Similarly, if we suppose AO to represent the basis of an index number say 100, and all the prices to be initially at O, and subsequently dispersed in the manner indicated by the curve, then we may detect an appreciation of gold, *although a large minority of prices have risen.* Imagine a physicist looking over the observations by which Laplace may have inferred that the mean height of the barometer falls between certain hours of the day; carefully picking out the days which showed an elevation instead of a depression; and triumphantly pointing out that, if we average the thus mutilated series, we shall obtain a result very different from that of Laplace. Yet this is the spirit in which Mr. Forsell has criticised the parallel method of Jevons.

---

[16] *Cf.* Beynamè, Art. "Moyenne," *Dictionnaire Encyclop. Medicale.*

[17] *Cf.* Dr. Venn's excellent examples of "the gradual and insensible advance from what is regarded as fictitious to what is claimed as real."—*Logic of Chance*, chap. xviii, pp. 14—17, 3rd edit.

[18] v being the velocity of the given ship and w of the wind, I believe that $\frac{dv}{dw}$ is *some definite* function of v; but I have hardly any idea *what* that function is (except that I presume $\frac{d_2v}{dw^2}$ to be continually negative).

[19] *Cf.* Professor Laughlin in the *Quarterly Journal of Economics* for 1877; Mr. David Wells in the *Contemporary Review*, November, 1887, p. 633, and several of the witnesses before the Royal Commission on the Precious Metals at present sitting.

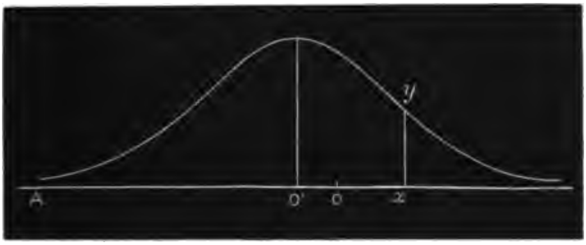


FIG. 2.

The parallel enables us to dispose of another difficulty which is often vainly raised.[21] The meteorologist examining those barometrical observations, might be able to account for each depression or elevation by a recorded cyclone or anticyclone. But a Laplace's calculation of probabilities is not invalidated by a Fitzroy's knowledge of causation. The same phenomena from different points of view may be regarded under the category of law and chance.[22]

---

[20] *Logic*, Book III, chap. xvii, Section IV.

[21] *E.g.*, by most of those referred to in the last paragraph.

[22] *Cf.* Venn, chap. v, Sections XIII and XIV. One of the best examples of this double aspect is the succession of digits in the evaluation of a mathematical constant. From one point of view this succession may be regarded as purely fortuitous, in fact the best instance of chance with which we are acquainted. There are in the development of π to 700 places of decimals, about as many *threes* as *fours* or *fives*. And yet there is a mathematical reason why every digit is what it is. The phenomenon exhibits at once perfect law and complete chance.

Laplace and Mill are quite right in treating as fortuitous "the irregular changes in the state of the atmosphere." Professor Nicholson is quite right, when he teaches that, in order to investigate the effect of rising wind or tide, we need not trouble ourselves about the peculiarities in the "build of the various ships or seamanship of the crews." Jevons is quite right in his similar answer to Cliffe Leslie's objections.[23]

The one postulate which is I think required (in the absence of special assumptions which do not belong to this section), is that the curve representing a complete series of price-returns may be regarded as singleheaded, like that in Fig. 2; not like that on Fig. 3 annexed:—

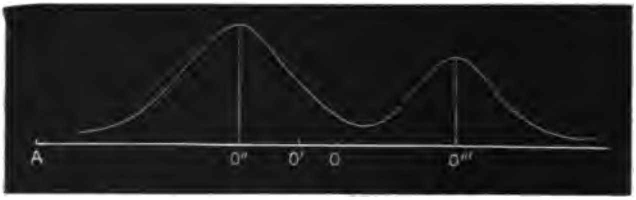


FIG. 3.

Here O′ has been put for the mean of the two-headed curve. But we do not know (in the absence of definite hypotheses[24] which are not proper to this variety of the problem) *what part of the curve* should be posited as our scope. Nor have we any presumption that the magnitude thus determined has any real significance, is even a "masked representation "[25] of an objective agency. The positions of the *greatest ordinates* for the two partial curves, the points O″ and O″ are much more likely to be valuable results as answers to problems less general than ours.

This condition appears to be fairly well fulfilled in those statistics of prices which I have examined.[26] Of course I am aware that it is always possible to demarcate categories of articles such that the returns belonging to one category should be all or most of them (like the little curves in the annexed figure) above or

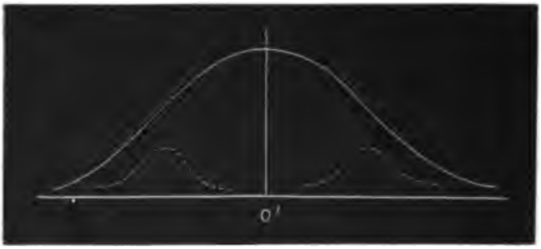


FIG. 4.

---

[23] *Currency and Finance*, p. 155.

[24] It will be shown in the sequel that also in the case where there exists a definite hypothesis, our power of ascending to the cause is apt to be less when the curve is of this two-headed form.

[25] Above, p. 352. [26] See in particular Memorandum, Section VIII, end.

below the general mean (O′ in the figure). This is an imperfection incident to all concrete statistics. Take the phenomena whose grouping seems best of all real statistics to fulfil the ideal *law of error* expounded by Quetelet—I mean the proportions of male and female births. It is well known that there is a category, like one of the little enclosed curves above, formed by the *still born;* for which the proportion, say 130 (: 100) lies quite apart from the general mean, say 104 or 105. Yet this abnormality and many others do not prevent the returns for the sex ratio forming an almost ideally perfect curve of error. So again the heights for different Italian provinces are grouped about discrete mean points.[27] And yet the grand compound curve for the Italian nation is justly regarded as one of the most perfect exemplifications of the typical law. Similarly, I think, the partial curves for different categories of prices are apt to overlap each other in such wise as to form by their supposition a compound curve, which may be regarded as—I do not say *typical* in the sense of Quetelet, or even symmetrical—but at least *monocephalous;* the sole condition imposed by the first variety of our problem.[28]

(2.) We have next to examine the second of the cases above distinguished[29] where the variation of general prices is considered as the measure of the increase or decrease of gold in relation to the work which it has to do. The treatment of this case may be divided into two operations: first to make such corrections for the variation in the volume of transactions, in the organization of credit, and in the rapidity of circulation as to reduce the problem to the simple case of general prices varying, other things being the same; and secondly to solve the simplified problem. I must leave the prior operation to the currency doctors; I can only undertake to prescribe for the simple case. The problem thus defined is not beset with the difficulties which are proper to the first problem. The postulate of oneheadedness is not here necessary. Reverting to our metaphorical water system, let us suppose that by some seismic agency, throughout half the system the level of the channels is uniformly raised from 100 to 140, and throughout the other half uniformly sunk to 80. The first problem becomes almost unmeaning. But the second problem does not necessarily[30] become more difficult, because the character of sporadic variation is wanting. The difficulty is now elsewhere: in that "other things" are not equal. But if we agree to waive that difficulty, if the dimensions of the channels, the secular proportion between the two elements, the rapidity of the currents and other variables, are regarded as constant, then the problem is straightforward. We have merely to ascertain the change in the volume of sea-water in our lagoons. For the example just given the answer is $\frac{1}{2} \times 140 + \frac{1}{2} \times 80 = 110$.

---

[27] See on this delicate point, Galton, *Phil. Mag.*, 1875; and *cf.* my note in *Nature*, September, 1887.

[28] Mr. Wells's articles in the *Contemporary Review* go to prove that there has not been a "Fall in Prices" in the sense here defined, in so far as he makes out that prices may be divided into two distinct and widely different categories: those which have been affected by diminished cost of production, and those which have not.

[29] See p. 351.

[30] It will be shown that a certain bypath would be blocked by this imperfection. See p. 367.

III. I proceed now to prescribe for the cases which I have diagnosed. (1.) If there were required a uniform treatment to be administered, like Dr. Sangrado's hot water cure, this general method would undoubtedly be the Arithmetic Mean. But it is better to attend to the symptoms of particular cases. Now it has been shown by me,[31] that the grouping of price returns is apt to differ from that form or curve which is specially correlated with the Arithmetic Mean, the typical law of error expounded by Quetelet. Particular prices rise extravagantly under the influence of scarcity or speculation; and the Arithmetic Mean, unduly influenced by these particular deviations, is dragged high above that centre of greatest condensation which is our aim and object.

Three remedies for this defect may be proposed. There is first (*a*) the Geometric Mean, which was recommended by Jevons for reasons which have been severely criticised by many writers, including the present one;[32] but which after all may express some intuition of the real ground of preference, namely, that the Geometric is more likely than the Arithmetic Mean to correspond to the greatest ordinate of the *unsymmetrical* curve which the statistics of prices are apt to form. As frequently in mathematical inquiries, genius appears to have flown on to a position where method plods up afterwards. The objection to this treatment is that, while it is very troublesome, it is not sufficiently drastic, for when extravagant deviations occur, like cotton in 1862, the Geometric Mean too becomes unsphered, and Jevons himself, in spite of his protestations against manipulation, is obliged to doctor the *cotton*, inserting an estimated, instead of the real return. But it appears to the present writer to be a prime condition of a good method that it should avoid the appearance of "jerrymandering."

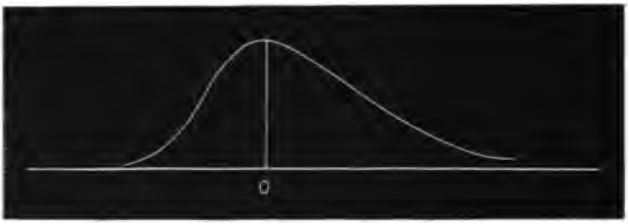


Fig. 5.

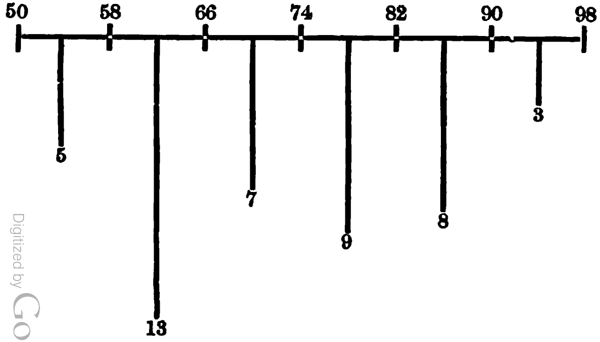
(*β*) Secondly it may be suggested that as our end is the point of greatest condensation of the *complete* curve or series of prices, so our most direct method is to find the greatest ordinate of the *sample* curve on which we have to operate.

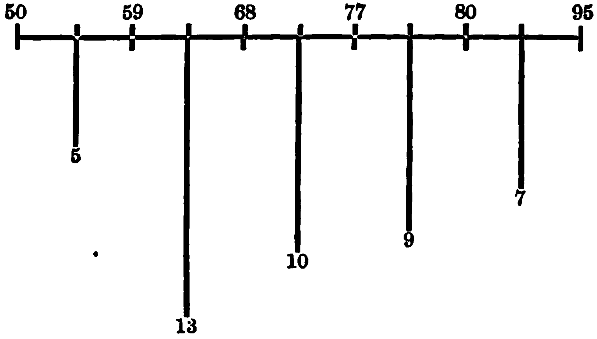
---

[31] Memorandum, Section VIII.

[32] See the note on the present subject in a former number of this *Journal* (1883, p. 717).

50	55	57	59	60	62	63	64	65	70	71	72	73	75	76	77	78	79	81	82	83	85	87	88	89	92	94	95
	55	57	59	60	62	63	64				72	73	75		77		79						88	89			
					62	63						73															





To illustrate this method, I take the forty-five price-variations given by Mr. Sauerbeck for 1880, and arrange them in the order of magnitude. Now as this arrangement, owing to accidental ripples, does not display the form of a regular curve, it seems proper to arrange the statistics in larger groups. But *what* degree, or unit interval shall we select, and from what origin shall we lay it down? It seems plausible to start from one of the extremities, and to select as unit the *smallest* interval which being thus employed will bring out the one-headed character of the curve. The number 8 for instance is not large enough. For, if I mark off the points 50, 58, &c., on the horizontal line taken as an abscissa, and erect in the middle of each degree thus made an ordinate indicating the number of observations in that degree, the curve is not yet smooth and sweeping. There is a dip between the ordinates 13 and 9. Accordingly I try 9; which gives the regular grouping on the right hand of the figure. But now it must be considered that we might equally have begun at the upper extremity, viz., 95. As it happens, the same process here applied leads to the same final form. Accordingly the greatest ordinate lies between 59 and 68; presumably at the point 63·5. By way of testing this method I have applied it to some statistics for which the true centre is known *à priori*, viz., a set of forty-eight numbers each formed by adding together five digits taken at random.[33] The *quæsitum*, the point which would be the most crowded if the series were definitely prolonged, is 22·5. Starting from one extremity I find for the centre 21·5; 22·5 from the other extremity: giving 22 as the answer.

The coincidence of these results with each other and with the truth is striking, but I fear accidental. For the first sort of coincidence is not presented in other cases. Thus in the case of twenty-one returns[34] selected from the forty-five above given, the result reached from the beginning was 60·5; from the end was 74. There are cases also in which no result, or only a very vague one, can be obtained without manipulation; in particular when a few observations are situate at a great distance apart from the rest. Take for instance Jevons's thirty-nine prices for 1862. They keep pretty well together up to 174. Then at an immense interval follow the three *cottons*, 263, 315, 347. It will be found I think impossible to fit in these figures into a *continuous* curve of the sort indicated with a measuring rod or unit interval less than 58. When the scale is so coarse, we must expect the measurement to be very rough.

A more elaborate, perhaps more determinate and precise, solution is afforded by a method which Professor F. Darwin has propounded for utilising *fallible measures*.[35] This method consists in smoothing the given discontinous curve by the repeated application of the following rule. Let x_{r-1} x_r x_{r+1} be the position of three successive observations (in the example given below 55, 57, 59). Let y_{r-1} y_r y_{r+1} be the corresponding ordinates; that is for our problem the number of returns enjoying the value designated by the abscissa (in the example respectively 2, 2, 1). Then put as the ordinate of x_r in a new or reduced curve the expression

---

[33] The figures are given in the March number of this *Journal*, p. 119.

[34] They are given below, p. 359.

[35] London *Phil. Mag.*, May, 1877.

$$\frac{(x_{r+1} - x_r)\,(y_{r-1} + y_r) + (x_r - x_{r-1})\,(y_r + y_{r+1})}{2(x_{r+1} - x_{r-1})}$$

$$\left(\text{in the example } \frac{2 \times 4 + 2 \times 3}{2 \times 4} = 1{\cdot}75\right)$$

The materals of the annexed example are the comparative prices for 1885 of twenty-one articles, selected on account of their importance, from the forty-five given by Mr. Sauerbeck. The first row gives the prices marked along the abscissa. The second row gives the corresponding ordinates; being each the number of times that a price occurs. The third row gives the ordinates generated by the original ones according to the rule. I have just introduced the second generation.

55	57	59	60	62	64	67	72	73	77	79	81	88	94	99
2	2	1	2	1	1	1	2	2	2	1	1	1	1	1
	1·75	1·5	1·5	1·25	1	1	1·12	2						
		1·37	1·46	1·25										

I hope that some more industrious arithmetician will trace out the remaining issue. For my part I feel no confidence that, so to speak, the principle of primogeniture will operate, that there will come to be as it were one preeminent head of the family, until after many generations. Especially is this the case if we make some convention concerning propagation from the *extreme* ordinates, of 2 and 1·75 in the example. I have left them to themselves according to Professor Darwin's recommendation. But I should think it was unsafe for our purpose, either on the one hand to regard them as true, or on the other hand to take no account of them (in which case the curve dropping two ordinates at each generation must come to a head soon).

This method might doubtless be adapted to suit our purpose better. And other methods have been[36] or might be proposed. But I fancy that they would all for the present purpose, as compared with a generically different method presently to be described, be more or less liable to the following objections:—

(1.) They are laborious.

(2.) They involve some arbitrary procedure.

(3.) They do not afford a measure of their own fallibility, their "probable error."

(4.) They violate a condition important in economic regulations, that the principle employed should be, as Mill says with respect to currency, "intelligible to the most untaught capacity." Altogether I think it is hardly safe to use the greatest ordinate method by itself, though it may be useful as an adjunct of another substitute for the Arithmetic Mean, which will now be described.

---

[36] *E.g.*, by Professor Darwin in the paper referred to.

(γ.) The method which is here recommended as upon the whole the best, in cases where the Arithmetic Mean is unsuitable in the Median. The Median (in its simplest form) is found by arranging the given observations in the order of magnitude, and taking that point or number which has as many observations above as below it. Thus, given the numbers 75, 74, 77, 70, 65, we have 74 as the Median; since it has two of the returns greater and two less than itself.[37] A longer example is given below.

The Median has the advantage over the Arithmetic Mean in that it is not violently disturbed by the fluctuations of extreme observations. In the case of the Arithmetic, and even the Geometric Mean, particular articles, like *cotton* and *tobacco* in the American war, unduly impress their individuality upon the general result. The friends and foes of this sort of calculus have been alike puzzled and scandalised by this circumstance. Even Jevons, in spite of his protests against manipulation,[38] has to doctor the *cotton* for 1861 and 1862; substituting an estimated for the actual price variation. And Mr. Forsell makes game of the whole calculation; here inserting and there omitting *cotton* and *tobacco*, so as to make the index number seem the sport of accident. But, had Jevons used the Median instead of the Geometric Mean, he might have adhered to his principle, "that for the particular purposes of this inquiry it is better not to know the details concerning the articles." The unmanipulated median of his thirty-nine articles is, for 1862, 112; while his adjusted Geometric Mean is 113·4.[39] That is even on the supposition that *three* observations representing cotton are admitted—which for the present purpose of ascertaining a type is, I submit, not proper. It is as if, having to measure the mean variation of the barometrical height from hour to hour by an average extending over several days, one were to assign double or treble weight to the record of a day on which a barometer with a tube of peculiarly large bore[40] was used. If then we admit only one cotton, the Median for Jevons's thirty-nine articles in 1862 becomes 110.

In dealing with the *Economist* returns, we ought similarly, after the manner of Mr. Palgrave and Mr. Bourne, to omit (*three* out of the four) cottons, or "boil them down" to one. I have taken from the *Economist's* tables the prices of the nineteen articles retained by Mr. Palgrave, for the trying period 1862-70; and herewith present a contrast between the Arithmetic Means for those nineteen articles and the Median for the same. I venture to think that I have minimised what Dr. Soetbeer[41] calls the "well founded objection that a great rise or fall in the price of a few important articles on the list, although caused by speculation, and of only temporary duration, may exercise a great effect on the index number arrived at."[42] I fancy Mr. Forsell would not find so much matter for ridicule here.[43]

---

[37] In the case of an even number of observations, say $2n$, it is proper to take the point intermediate between the observations which are the n^{th} and $(n+1)^{\text{th}}$ in the order of magnitude.

[38] *Currency and Finance*, p. 58.

[39] Ibid., p. 44.

[40] Or *three* barometers of unit diameter. Which, however, *in so far as mutually corrective*, would possess a certain advantage over the single simple observation. This is the principle on which weight should be assigned in *this* species of index numeration. See below, and Memorandum, Section IX.

[41] Taussig's translation, p. 602.

Arithmetic Mean.

Periods of Years.	With Tobacco and Cotton.	Without Tobacco and Cotton.
1862–64	139	*121·5*
1865–67	138	*123*
1868–70	119	*114*

Median.

Periods of Years.	With Tobacco and Cotton.	Without Tobacco and Cotton.
1862–64	130	*126*
1865–67	123	*122*
1868–70	115	*112*

In each of these contrasted tables the first column states the triennium for which in the second column there is given the Mean of *fifty-seven* comparative prices, being the prices for three successive years of the *nineteen* articles selected by Mr. Palgrave from the *Economist's* tables (the *Economist's twenty-two* articles minus cotton-wool, cotton-yarn, and cotton-cloth). The prices are those quoted by the *Economist* for 1st January of each year.[43] In the third column each entry is a mean of *fifty-one* prices, being the same as those upon which the second column is founded, with the omission of *tobacco* and *cotton* (for three years). The tables prove how differently the Arithmetic Mean and Median are affected by these disturbing elements.

Look at this picture and at that, and you cannot doubt that the Median is the better qualified to fix and measure the mean variation of the monetary barometer, by an average extending over many observations; at any rate where the commercial weather is extremely variable; where the cyclones of war or anticyclones of speculation produce eccentric deviations from that mean result which may be due to "causes operating on all commodities whatever."

---

[42] Of course it remains true that an argument in Probabilities is always the better for an addition to the data, and is always at best liable to caricature.

[43] In the *Economist* for 12th March, 1870, Commercial Review p. 52, will be found all the 171 data employed in constructing this table.

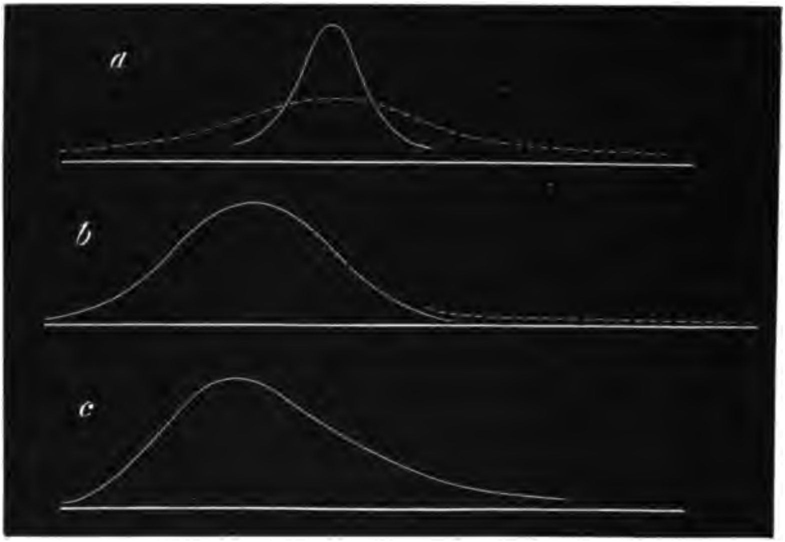


FIG. 6.

Three cases may be specially distinguished in which the Median has the advantage both over the Arithmetic Mean and the substitutes for the Arithmetic Mean (with some reservations in favour of the Geometric and the Greatest Ordinate). The first case (*a*) is where the curve of grouping is compounded of two *typical* curves (or indeed any two symmetrical curves) of which one is right at the head and the other is long in the limbs. The superposition is not shown in the figure. The second case (*b*) is where a *typical* curve is distorted by the extension of a thin but long limb in one direction (by the occasional occurrence of extreme deviation greater than the typical law of error presents). The third case (*c*) is the asymmetric curve which is specially correlated with the Geometric Mean.[44] There is reason to believe that these attributes in different degrees and proportions are actually realized by the statistics of prices. The occasions on which this verification may be looked for are times when there is an exceptional scarcity of one or two articles, as of *tobacco* and *cotton* during the American war; times of buoyant speculation as 1873; and generally short periods[45] as contrasted with averages extending over a long period. The greater the number of particular returns absorbed into each of those average prices which form the data of our calculation the more likely are those data to conform to the *typical law of error*[46] and accordingly to be adapted to the Arithmetic Mean.

---

[44] Analysed by Dr. Macalister in the *Proceedings of the Royal Society* for 1879.

[45] Or small places.

[46] See my "Methods of Statistics," *Journal of the Statistical Society*, Jubilee volume.

It is a question of detail whether it would be better to employ the Median constantly, or only on those occasions when it is likely to have an advantage over the Arithmetic Mean.[47] I may observe that even where the Arithmetic Mean is better, it is not likely to be very much better. To take an illustration *in aliâ materiâ.* I have applied the Median to two sets of astronomical observations in number respectively 40 and 606. The Median is in both cases virtually identical with the Arithmetic Mean. These results are conformable to theory.

There still remains the question whether the Median shall be simple or weighted. For the Median also admits of being weighted, by allowing certain of the constituents to count for more than one. Now the ordinary considerations on which weight is claimed for the larger masses of value, for *cotton* in preference to indigo, whether as of more importance to the consumer, or as absorbing more currency—these reasons, even if defined more clearly than they usually are, seem entirely out of court here. They are as it were excellent moves at chess; but we are now playing billiards. From the present point of view, in order to determine a type by the Calculus of Probabilities, the attribute which gives importance to an article is not its quantity, but the *independence of its fluctuation.* From this point of view *pepper* may be as good as *cotton;* just as the mere size of a rain gauge does not directly affect the value of its indications. Upon this ground, as an indirect deduction[48] from the principle of independence, I have recommended assigning rather larger weights to the more massive commodities. For certain technical reasons I advise that each price return should count for as many, should in effect be repeated as often, as the *square root* of the number of units in the quantity of the corresponding commodity.

The annexed table and commentary, extracted from the Memorandum to which reference has been made, illustrates the Simple and the Weighted Median. The first column of figures are price-variations, expressed as percentages, for nineteen commodities, obtained by comparison of the year 1870 with the period 1865-69. The figures are taken from Table XXVI of the Appendix to the Memorandum contributed by Mr. Palgrave to the Third Report on the *Depression of Trade.* The percentages given by him are here rearranged in the order of magnitude. Opposite each percentage in the third column is given the proportional quantity of commodity, or 'relative importance,' taken from Mr. Palgrave's Table XXVII (year 1870). The fourth column contains the (approximate) square roots of these quantities. Now for the *Simple* Median the rule is to find that one of the entries in Col. 2 which has as many observations above as below it: that is the *ninth* in the order of magnitude; which proves to be 94. For the *weighted* or corrected Median we still seek the entry in Col. 2, which has as many observations above as below it; but we proceed as if the observation 71 had been made, not once, but 19·3 times; the observation 72 made 12·8 times, and so on. There being in all nearly 177 such constructive observations, the Median is the 89th, that is 94. Or in other words we have to find in the fourth column, that figure which is such that the sum of all above [or below] it *with* the figure itself should be greater than half the sum of the entire column, but *without* that figure should be less than half the entire sum. The figure thus defined proves to be 6·2. For the sum of the entries above that figure is 82·3, and the half sum of the column is 88·25. Now 82·3 is less than 88·25, while 82·3 + 6·2 is greater than 88·25. The entry in the second column which corresponds to the figure thus determined, viz., 94 (corresponding to 6·2), is the required *Weighted Median.* The weighted Arithmetic Mean as calculated by Mr. Palgrave is 90. By a similar operation performed on the export statistics for the year 1880, given by Mr. Giffen in his report of the year 1881, it is found that the Weighted Median (for the decline of price compared with 1861) is —7·8. Mr. Giffen's result, the corresponding Weighted Arithmetic Mean, is —5·83.

---

[47] Thus we may expect the Median to be more required when the mean of the highest and lowest prices in the year figures in our data rather than an average extending over every month or week.

[48] *Cf.* note to p. 360, and Memorandum *loc. cit.*

Commodities.	Price-Variations.	Quantities.	Square Roots of Quantities.
Cotton	71	381	19·5
Wool	72	164	12·8
Tobacco	75	17	4·1
Wheat	80	418	20·5
Copper	82	30	5·5
Coffee	89	8	2·8
Tea	90	66	8·1
Flax	91	82	9
Oils	94	38	6·2
Lead	95	21	4·6
Leather	97	55	7·4
Iron	97	128	11·7
Silk	98	49	7
Tallow	101	44	6·7
Meat	102	382	19·5
Timber	104	150	12·2
Indigo	107	9	3
Sugar	120	143	12
Tin	120	15	3·9
	—	2,200	176·5

The operation is much simplified by noticing that it is sufficient to arrange the percentages in the order of magnitude *in the neighbourhood* of the Median. The rest may be entered pell-mell as they come.

If this use of the *square root* appears too much of a refinement, perhaps it would be as well for the look of the thing, and as it is really not likely to make much difference[49] to use the unmanipulated quantities instead of their square roots, the third column instead of the fourth. The Median so obtained might be compared or combined with the Simple Median. Thus in the example 91 is the Median obtained by the use of the third column. And the Simple Median is 95. Whence for the adjusted Median we have 92·5.

---

[49] See on this point my Memorandum of 1888. With the system of weights proposed by the British Association Committee, and supposing 25 independent price

(2.) To find the average proper to our second case, I first assume the problem to be reduced to its simplest form.[50] We are then to suppose that, other things being equal, the level in all and each of our metaphorical channels is disturbed. In order to ascertain how much the salt contents of the channels have varied, we have here *primâ facie* merely to multiply each variation with (a factor proportionate to) the superficial dimensions of the channel, and add these products. In short, we form a weighted index number of the kind employed by Mr. Palgrave.

It is very important to understand that *this* solution of the problem does *not* postulate *sporadicity*. Suppose the beds of some lagoons to have been uniformly depressed, of others raised *en bloc.* This solidarity does not vitiate our formula.

So far, supposing that the proportion of sea-water in the different channels is the same. But there is every reason to believe that this is not so. The proportion may be very small in the lagoons of *cotton*, and very large in the main channels of distribution by which *labour* is transferred to the employer's use. The best then we can do, is to adopt a system of weights like Mr. Palgrave's as a first approximation, and then to make correction according to the nature of different transactions.

So very conjectural are these estimates that a doubt may rise whether a conclusion based on them is much worth. But it is to be remembered that the error in an estimate relative to one item, *e.g.*, coal, is apt to be compensated by the independent error on another item, *e.g.*, iron. In the concatenation of probabilities the chain is stronger than its weakest links. The whole is more accurate than a part. The extent of error to which the result is liable may be estimated from the materials and formulæ which I have prepared for the British Association. Other things being equal, the error diminishes as the number of items increases. For English prices we may roughly state that the probable error of the result will be less than the probable error incident to each of the data, the determinations of weight, in the ratio $3\sqrt{n} : 1$. That is, supposing the *prices* to be accurately given. But this cannot be supposed, and a heavy addition to the error is made by the necessary imperfection of these statistics. It still is true, however, that the error tends rapidly to diminish as the number of the items increases.

Such is the solution of the second problem in a certain abstract sense: reduced or simplified my making allowance for the variation

---

observations, the difference between the Median obtained by way of Col. 3 and the Simple Median would be very unlikely to exceed 2 or 3 per cent. *A fortiori*, the difference between the results of Cols. 3 and 4 is likely to be small, and within the probable error to which any mode of averaging is liable.

[50] See above, p. 355.

of certain coefficients which cannot be treated as constant: in particular the volume of transactions, the organisation of credit, and the rapidity of circulation. I do not conceal the suspicion that, before this stage of simplicity is reached, the calculation will have lost the name of science. For *the mutual compensation of errors is not here available.* We have to assign a factor which affects our computation as a whole; such as the change in the relation between credit and hard cash transactions. Nor should we fare much better if we pursue the same end by a method which does not properly come into the present paper, as it does not operate upon prices. I allude to the comparison between the quantity of gold in active circulation (ascertained independently of price-statistics) and the volume of hard cash transactions. It may be doubted whether in the present state of statistics either method is available to prove even the direction—much less the amount—of change in the quantity of metallic currency relative to the work of transfer which it has to do.

However a distinction is to be drawn between two shades of the problem now under consideration, our Problem (2). We may either limit our estimate to a particular district or country, or extend them to the whole system of countries in monetary communication, what the Germans call the Munzgebiet. The problem in the limited sense is doubtless more soluble; and its solution may be used as a subsidiary proof and verification of the *quæsitum* prescribed by our Problem (1). It is thus that I understand Mr. Giffen's reasoning in his paper already referred to.[51] The primary object of his inquiry is the average variation of prices in England. He ascertains it first directly by averaging prices; and secondarily by comparing for England the quantity of gold in active circulation with the volume of hard cash transactions.[52] When we extend our view to the whole "Munzgebiet," we have I think a more substantive conception and important scope as the answer to our Problem (2). This answer is in effect the ratio in which the volume of metallic money in the world should be increased in order to keep the relation between money and commodities constant. The sort of statistics which are available for this purpose may be found in Dr. Kral's elaborate monograph, *Geldwert und Preisbewegung.*[53]

If it is judged that the direct methods of solving our second problem, in its wider sense at any rate, are blocked by insurmountable statistical difficulties, we have still a resource for the solution of Problem (2). We may ascertain an average variation of general prices according to the method of our first problem, which will also be answer to our second problem. For, if general prices on an average have varied, then the prices of commodities exchanged for hard cash will have similarly varied. Thus we may say that to every unit volume of hard cash transactions[54] there goes so much more gold.

---

[51] Above, p. 351.

[52] Making the estimate, which has been questioned, that the ratio between credit and hard cash transactions had not materially altered during the period considered for the United Kingdom.

[53] Referred to in my Memorandum.

But then there recurs upon us the anxious question whether the condition required for the solution of our first problem is fulfilled;[55] whether the price-variations may be regarded as grouped sporadically about a single mean type. This subtle point will puzzle some who may have hoped to have heard the last of *sporadicity* on reaching the more objective part of our problem. They may have reluctantly granted that two-headed curves, such as our figure 3, may be of little statistical value in the absence of any interpreting hypothesis. But surely it may be urged, when it is *known à priori* that a unique real entity underlies the observations however disunited, then we are justified in taking the mean of those observations as the representative of that objective thing.

An example *in aliâ materiâ* may clear up this point. Suppose that the shot marks on a target arranged themselves in the manner indicated by fig. 3 (the abscissa representing distance along a certain line, and the ordinate the number of shot marks at each distance). Now (1), if we know nothing *à priori* about the genesis of those marks, the total average is almost worthless. But (2), let it be granted that this grouping has resulted from firing at one and the same bullseye on two successive days, when different winds deflect each set of shots in opposite directions.[56] Something of this sort I understand actually occurs at Woolwich. Upon this hypothesis it is doubtless proper to take the mean of all the observations as representing the bullseye. But it is very likely to be a very bad representative. For, whereas in a simple cluster of observations, the error of the average is diminished as the *square root* of *n*; in this abnormal compound cluster, *there are virtually only two observations*—the separate averages of the discrete clusters—for the bullseye. The peculiar grip which a *plurality of independent events* affords to the Calculus of Probabilities becomes wanting. The "probable error" of the result amounts at best[57] to about half the distance between the partial centres O′ O″. An error equal to the whole distance is not very improbable. In short the result is not indeed, as before worthless, but it is worth very little.[58]

---

[54] The reader will find his conception about this whole subject much cleared up by the original idea of an "average ton" of commodities introduced by Sir Rawson Rawson.

[55] Above, p. 354.

[56] *Cf.* Dr. Venn's felicitous illustration, *Logic of Chance*, chap. xix, p. 36.

[57] That is if even the number of shots fired on the two days is indefinitely large.

[58] An acute friend objects that this illustration neglects the circumstance that a rise of price in some articles has some tendency to cause a fall in others. But this omission is not *here* material, as may be seen by reverting to our primary metaphor, which is not open to the same objection. Suppose that seismic forces, acting upon the bed of our lagoons, *uniformly* raise one-half and depress the other half, while at the same time a tidal force of unknown efficacy operates on the whole system, tending to increase (or decrease) *all* the depths. And let the resultant fact be that one large class of the channels has become deeper, and another shallower, then I say that the *average variation of the whole system* is, in the sense implied by the collateral method now under review, almost worthless.

Is there then one type, and not two types, of price-variation throughout the cultured countries—or some one of them if we take the narrower view of our problem? This is a question of fact on which there are others more competent to speak. I should be quite prepared to find on fuller study that an appreciation of gold may as legitimately be predicated of the civilised world as the proposition that the ratio of male to female births is about 105 : 100. That proposition is not true even in quality for many districts where more girls are born than boys. It is very inaccurate in quantity for considerable classes, *e.g.*, the stillborn and perhaps the first born. But it is true—as true as any statistical proposition can be—of the whole. The proposition that gold has in recent times appreciated may be equally inaccurate and equally admissible.

If these views are correct, the solution of our second problem stands or falls with that of the first; and it probably stands.

IV.—*Emigration and Immigration in the Year* 1887.

THE following is a copy of Mr. R. Giffen's report to the Secretary of the Board of Trade on the Statistical Tables relating to Emigration and Immigration from and into the United Kingdom in the year 1887. In continuation of similar reports to be found in the *Journal* for previous years:—

"In presenting the accompanying tables relating to emigration and immigration from and into the United Kingdom during the year 1887, I desire, as in former years, to call attention to the general features of this movement, so far as they are disclosed by the returns collected by this department. In view, however, of the attention which has lately been directed to European immigration into this country, it is perhaps desirable to again point out that no information on this subject is contained in the following

The probable error of this result, as the measure of the tidal effect, is about half the interval between the different *new* depths; *e.g.*, about half 30, if one moiety has sunk (from 100) to 80, and another risen to 110. But the effect due to the tidal force, the residual phenomenon to be measured, must, I think, be smaller than 20, and may be very much smaller; so much so that some doubt whether it exists. Measuring a magnitude of this order by the *average variation*, is like determining atomic weights with kitchen scales. In fact *in the absence of sporadic dispersion*, Messrs. Forsell, Laughlin, and Co. would be quite right in postulating a fall in *all* commodities to prove appreciation of gold. Jevons would be quite wrong in his calculation of the probable error incident to his index number (*Currency and Finance*). And he doubtless is a little wrong in so far as sporadicity is less perfect in price variations than in ordinary physical observations. Suppose that by a proper classification his thirty-six variations could be explained by eighteen or nine independent principal causes (combined with disturbances of a smaller order), then the probable error in Jevons's calculation might have to be multiplied by 1·2 or 5.

The problem belongs to the *Theory of Averages*, and those who discuss it should do so in the spirit of the Calculus of Probabilities.

tables, which relate solely to the movement of passengers between the United Kingdom and places out of Europe and not bordering on the Mediterranean.

"Examining first, then, the *gross* amount of such emigration, it appears that the expansion in volume of this outward current which occurred in 1886 as compared with 1885 has been continued during the year just ended, the numerical increase being very nearly the same. The figures are:—

Emigration in 1885, 1886, *and* 1887.

	Total, including Foreigners.	Emigrants of British and Irish Origin only.
Number of emigrants in 1887	396,494	281,487
" '86	330,801	232,900
" '85	264,385	207,644
Increase in 1887	65,693	48,587
" '86	66,416	25,256

As will, however, appear from this table, the expansion of *total* emigration, though considerable, has proceeded at a diminished rate, the figures for 1887 showing an increase of rather less than 20 per cent. over the numbers given for the previous year, while the 1886 figures represent an increase of about 25 per cent. over 1885.

"In 1886 the increase in the number of emigrants was especially marked in the case of those of foreign origin, while in 1887 it occurred chiefly among the British and Irish emigrants, the numbers of these rising from 232,900 in 1886 to 281,487 last year, an increase of nearly 21 per cent., as against 12 per cent. only in 1886. The total number of foreigners who emigrated from ports of the United Kingdom in 1887 was 108,572, as against 94,370 in 1886, an increase of only 15 per cent., while the advance of this class of emigrants in 1886 as compared with 1885 was one of 75 per cent.

"The number of British and Irish emigrants in 1887, 281,487, is the largest yet reached in any year since the nationality of emigrants has been distinguished, with the exception of 1883, when the number was 320,118. Taking the population of the United Kingdom at the middle of 1887 as 37,091,564 (according to the estimate of the Registrar-General), the proportion of emigration (of British and Irish) thereto was for that year 0·76 per cent., a higher rate than that of any previous year since 1854 except the year 1882, when it was 0·79 per cent., and the year 1883, when it was 0·90 per cent.

"Of the *gross* number of passengers from the United Kingdom —hitherto dealt with—many are, of course, not emigrants in the proper sense of the word, but travellers on business or pleasure. The great majority of cabin passengers no doubt belong to the latter class, and some idea of the proportion borne by such travellers to the emigrants, strictly so called, and of the development in recent years of this passenger movement, may be gathered from the following statement:—

Numbers of Cabin and Steerage Passengers leaving the United Kingdom for Places out of Europe, in each of the Years from 1876 *to* 1887 *inclusive.*

Years.	Cabin Passengers.	Steerage Passengers.	Total.
1876	41,900	96,322	138,222
'77	37,147	82,824	119,971
'78	43,168	104,495	147,663
'79	43,928	173,235	217,163
'80	50,734	281,560	332,294
'81	54,270	338,244	392,514
'82	56,739	356,549	413,288
'83	55,840	341,317	397,157
'84	57,403	246,498	303,901
'85	51,428	212,957	264,385
'86	59,382	271,419	330,801
'87	60,754	335,740	396,494

"From these figures it appears that the number of cabin passengers is, in the main, steadily increasing, and is not liable to the fluctuations noticeable in the numbers of steerage passengers.

"Some small part of the emigration from the United Kingdom to the United States has of late years been effected by way of the continental ports, Antwerp, Rotterdam, and Amsterdam, and of such passengers no account is taken in the appended set of tables. The figures for last year are subjoined,[61] and may be compared

---

[61] Emigration from the United Kingdom to the United States in 1887, *viâ* continental ports.

Nationality.	Adults.				Children under 12 Years of Age and Infants.		Total.	
	Married.		Single.					
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
English	449	273	700	150	148	169	1,297	592
Scotch	35	16	38	19	4	18	77	53
Irish	25	23	28	22	11	27	64	72
Total British	509	312	766	191	163	214	1,438	717
Foreigners	277	161	446	138	74	99	797	398
Grand total	786	473	1,212	329	237	313	2,235	1,115
Corresponding figures for 1886								
Total British and Irish	407	311	1,027	229	145	173	1,579	713
Foreigners	239	170	582	168	82	104	903	442
Grand total	646	481	1,609	397	227	277	2,482	1,155

with similar figures in previous reports. It will be seen that emigration by this indirect route is small, and shows no tendency to increase.

"The return current of immigration falls next to be considered.

"The total amount of immigration is seen from the following table:—

Immigration in 1885, 1886, *and* 1887.

	Total, including Foreigners.	Immigrants of British and Irish Origin only.
Number of immigrants in 1887	119,013	85,475
" '86	108,879	80,018
" '85	113,549	85,468
Increase in 1887	10,134	5,457
Decrease in '86	4,670	5,450

"This shows an increase in number both of foreign and of British immigrants in place of the decrease noticeable last year. This increase in immigration, coupled with a continued increase in emigration, is in exact accord with the rule to which attention has been called in previous reports: 'An increase of immigration accompanies generally an increase of emigration, and reaches its maximum in those years when the emigration begins to fall off from the maximum it has itself reached, and then in the succeeding years emigration and immigration both decline; the minimum, however, in the case of emigration preceding the minimum in the case of immigration, which, as a rule, occurs in the first year after the emigration, having declined, begins again to increase.'

"The importance of a record of immigration is obvious, as, in order to properly estimate the extent to which a transfer of population takes place in any year from the United Kingdom to other countries, the number of immigrants should, of course, be deducted from the gross number of emigrants. The *net* emigration for the last three years, as thus calculated, is seen from the following table:—

Excess of Emigrants.

	Total Number of Passengers.	Passengers of British and Irish Origin only.
Number of emigrants in 1887...........	396,494	281,487
" immigrants '87...........	119,013	85,475
Excess of emigrants in 1887	277,481	196,012
Corresponding excess in 1886	221,922	152,882
" '85	150,836	122,176

"The *total* surplus emigration (*i.e.*, including foreigners) has thus again increased during 1887, though not to the extent observable in 1886, when the effect on the balance of population of an increase of emigration over 1885 was enhanced by a simultaneous small decline of immigration. On the other hand, the net emigration of persons of British and Irish origin only has increased even more than in 1886, the 1887 figures representing an advance of 28 per cent. over those for 1886, while these again showed an advance of 25 per cent. over the numbers returned for 1885. The proportion of *net* British and Irish emigration to the total estimated population of the United Kingdom at the middle of the year was (for 1887) 0·53 per cent., as compared with 0·42 per cent. in 1886, and 0·34 per cent. in 1885, which was the last *minimum* year of emigration. This net emigration *proper* was composed of 93,628 adult males, 64,628 adult females, and 37,756 children (under 12 years), males being thus 29,000 in excess of females, while children were in the proportion of nearly 20 per cent. This excess of males occurs chiefly among the English and Scotch emigrants, the sexes being nearly equal in number among the Irish.

"To the *gross* British and Irish emigration the Irish, in 1887, contributed 28 per cent., a proportion slightly greater than that of the preceding year, but still below the average proportion for the last three quinquennial periods, 1871-75, 1876-80, 1881-85, and far below the high rate observable in the years preceding 1869-70. Scotch emigrants maintain about the same proportion as in former years, viz., 12 per cent., leaving 60 per cent. to be accounted for by the English emigrants.

"By far the greater number of emigrants still select the United States as their country of destination, the proportion going thither of the total number of British and Irish emigrants being 72 per cent. in 1887, as against 66 per cent. in 1886; 34,183 (12 per cent.) went to the Australasian colonies, as against 43,076 (or 18 per cent.) in the previous year; while 32,025 (or 11 per cent.) proceeded to British North America, the proportion being unchanged from that of 1886, though the number is higher by 7,280. Taking English emigrants separately, the proportion going to the United States in 1887 was 63·6 per cent.; to British North America, 14·6; and to Australasia, 14·9; while of Irish emigrants no less than 87·6 per cent. were bound for the States. During the thirty-five years from 1853 to 1887, neglecting the return current of immigration, of which for the early part of this period there is no account, nearly four and a quarter million persons of British and Irish origin have left the United Kingdom for the United States, 2,165,532 of these being Irish. Some idea of the effect which this movement from our shores still exerts on the population of the United States, Canada, and the Australasian colonies, may be gathered from the following table, compiled from the census tables of each of the countries named on the left hand side of the table, in which the figures relate to the census year 1881, or, in the case of the United States, 1880:—

Statement showing the Number of Persons Born in the United Kingdom, and in England, Scotland, and Ireland respectively, forming part of the Population of the undermentioned Countries according to the last available Census Tables; with the Proportion of such Persons to the Total Population of these Countries.

Country.	Population.	Persons Born in			Total Born in the United Kingdom.	Percentage of Population Born in the United Kingdom.
		England.	Scotland.	Ireland.		
United States	50,155,783	747,462	170,136	1,854,571	2,772,169	5·5
Canada	4,324,810	169,504	115,062	185,526	470,092	10·9
Australasia—						
New South Wales	751,468	110,674	25,079	69,192	204,945	27·3
Victoria	862,346	147,453	48,153	86,733	282,339	32·7
South Australia	286,211	59,151	10,637	18,246	88,034	30·8
Queensland	213,525	37,390	9,929	28,295	75,614	35·4
Western Australia	32,054	6,760	732	2,975	10,467	32·6
Tasmania	115,705	17,307	3,744	7,192	28,243	24·4
New Zealand	534,030	121,187	52,753	49,363	223,303	41·8

"To these figures it may be added that the total German born population of the United States at the census of 1880 was returned as 1,966,742, or 3·92 per cent. of the total population, a proportion slightly higher than that of the inhabitants of Irish origin, who formed 3·70 of the population. It may assist in realising the meaning of these figures to remember that the total number of foreign born residents in the United Kingdom at the last census was only 135,640, or rather less than 0·39 per cent. of the population. This is not the place to trace the manner in which the foreign element distributes itself over the United States, as to which some interesting particulars are contained in the census tables for that country; it may, however, be mentioned that of the total population of the State of New York, numbering 5,082,871, no less than 1,211,379, or nearly one-fourth, are returned as foreign born, while even this proportion is exceeded in the States of Nevada, Arizona, Dakota, Minnesota, and California, in each of which the foreign born settlers are more than a third of the total inhabitants.

"In the city of New York itself, out of a total population (in 1880) of 1,206,299 there were 237,935 returned as born in the British Isles, viz., 30,657 in England, 8,683 in Scotland, and 198,595 in Ireland; the Irish element thus amounting to 16·5 per cent. of the population of the city.

"The decrease in emigration to Australia noticeable in 1887 is no doubt to be attributed in part to the reports which have reached England of the overstocking of the labour market; it has also to be remembered that free passages are at present not granted to any of these colonies except Queensland, and that assisted passages are only granted to Queensland, West Australia, and New Zealand, and these under strict limitations. It has frequently been noticed in former reports that emigration to Australia has been largely an assisted emigration, and has risen or fallen as assistance has been given or withheld.

"The general increase in emigration, and especially the increase in emigration to the United States, may no doubt be considered as an additional sign of the revival of trade. As has been pointed out in previous reports, there is an oscillation in the amount of annual emigration broadly corresponding to variations in general trade prospects, and particularly to such variations in the countries of destination; emigration rises or falls as trade is brisk or dull. The last minimum point was reached in 1885, and in the last two years there has been a marked expansion in emigration. There are signs of the revival of trade being likely to make progress for some time to come, and it remains to be seen whether this hope will be realised, and whether a continued development of emigration will take place in the current year.

"A few years ago, in consequence of the interest in the question as to the operation of the immigration laws of the United States regarding pauper aliens, the Board of Trade requested their principal officers at the different ports to obtain returns from the shipowners of the number of emigrants rejected by the United States authorities and sent back to the United Kingdom on the ground that they were likely to become a public charge. During the last two years the returns thus obtained are believed to have been complete, and the general results are shown in the following table:—

Table showing the Total Number of Emigrants who were Rejected by the United States Authorities and sent back to the United Kingdom during the Years 1886 *and* 1887, *on the ground that they were likely to become a Public Charge.*

[From returns supplied by shipowners].

Nationality.	Adults.		Children and Infants.		Total.		
	Males.	Females.	Males.	Females.	Males.	Females.	Total.
	1886.						
British and Irish..	27	43	4	5	31	48	79
Foreigners	37	29	15	10	52	39	91
Total	64	72	19	15	83	87	170
	1887.						
British and Irish..	32	29	9	10	41	39	80
Foreigners	5	7	3	3	8	10	18
Total	37	36	12	13	49	49	98

"From this it appears that the number of emigrants rejected and returned in 1886 was 170, and in 1887 the number was 98.

The number of British and Irish included was in each year about the same, viz., 79 in 1886, and 80 in 1887, while the number of foreigners included amounted to 91 in 1886, and to 18 only in 1887.

"With regard to other points dealt with in the accompanying tables,[62] it may be pointed out that the chief ports of embarkation are, as hitherto, Liverpool, London, and Queenstown; and the facts as to the remaining ports are that a somewhat larger number of emigrants than usual embarked in 1887 at Southampton and Londonderry, and a somewhat smaller number at Plymouth and Dartmouth.

"Details are also given, as usual, in the appended tables[62] as to the sex, age, condition, and occupations of emigrants in 1887; the numbers departing from each of the ports of the United Kingdom; the amounts of detention money recovered by emigration officers; and, so far as can be ascertained, the amounts of remittances made by settlers in the United States, British North America, and other places, to friends at home. Comparative tables[60] are also added, giving figures as to emigration for a series of years."

V.—*Relative Advantages of the Railways and Waterways of Germany.* (Translated from the *Bulletin du Ministère des Travaux Publics,* November, 1887.)

M. Todt of Cologne has recently issued a very valuable publication containing much interesting statistical information, and many original views upon the question of the traffic on waterways and railways in Germany. It deals also with the question of competition between the latter and internal navigation. M. Todt says:—

"Public opinion in Germany has for some considerable time been preoccupied with the question of the favourable influence that might, from the point of view of the lowering of the prime cost and selling prices, be exercised by the development of navigable waterways. This question has to some extent forced itself upon public notice, and attracted general attention through the approaching execution of the works in connection with the canal from the Rhine to Ems, also of the canal from the North Sea to the Baltic, and the canalisation of the Spree. To these projected improvements, improvements which to some extent are actually decided upon, may be added many others, among them being the canalisation of the Moselle, the junction of the canal from the Rhine to the Meuse, the canalisation of the Ruhr, the lengthening up to Ruhrort and Duisburg of the canal from Ems to the Rhine, the deepening of the Rhine upward towards Cologne, the junction of this river with the Weser and the Elbe, and the improvement of the Oder between Cassel and the mouth of the Niesse. If these improvements were effectually carried out, they would constitute a kind of vast artificial network over which goods would be transported at a much lower rate than they are at present. The economy thus realised would inevitably tell upon the selling prices, and would open up new outlets for German products.

---

[60] The tables referred to are omitted for want of space.

"To the objection that the desired improvements would weigh very heavily upon the finances, at first by the interest and repayment of the capital engaged, and afterwards by the depreciation that the railways would suffer, the reply is made that the navigable ways would assure the development of the mineral and forest wealth now lying idle or insufficiently cultivated; moreover, it is urged that merchandise that could be carried by canals and rivers in preference to the railways are raw materials of small value, which being carried at a low rate, do not constitute a remunerative traffic."

Those in favour of the development of waterways rely besides upon the enormous increase which for some years has been noticeable in the movement of shipping. From 1840 to 1883 the quantity of goods passed at the Custom House at Emmerich (entrance of the Rhine in Holland) has increased from 381,000 to 4,500,000 tons. At Hamburg, during the period 1857-60 to 1885 it increased from 500,000 to 2,400,000 tons; at Breslau (1880 to 1885) from 120,000 to 475,000 tons. The movement at the port of Berlin increased during the same period from 1,050,000 to 3,500,000 tons. The Rhine, the Elbe, and the Oder have all taken an increasingly important part in this general movement, and that in spite of the development of the railway system. It is from this fact that the partisans of canal development draw the most favourable conclusions.

Unfortunately the information available as regards the question of the actual traffic upon the waterways in Germany leaves much to be desired from the point of view of statistical accuracy, and in this respect compares unfavourably with the same data relating to the various railways. They show in arrivals and departures the movement at the principal ports, and by dividing by two the sum of these figures we are enabled to arrive at an estimate of the average traffic on the navigable ways. The origin and destination of the goods is however unknown, as is also the distance traversed, the traffic at the intermediate ports is also an unknown quantity. Certain important places, Breslau for example, are absolutely unprovided with the means of collecting statistical data.

The following is an estimate of the quantity of goods carried over the German navigable ways in 1884. Basin of East Prussia, Niemen, Vistula, Pregel, and Passarge, 2,227,000 tons; basin of the Oder, 861,000; basin of the Elbe, 7,767,000; basin of the Weser, 218,000; basin of the Ems, 176,000; basin of the Rhine, 7,565,000; Lake of Constance, 338,000, and the Danube, 210,000 tons, making in all, including the small coasting trade of Frisches and Curisches Hoff, a total of 19,362,000 tons.

It will be seen that the basin of the Elbe holds the first rank, that of the Rhine coming next in the order of importance. The principal traffic upon the Dutch Rhine appears to be shown at the custom house at Emmerich, the clearances amounting to

2,702,000 tons, and the entries to 1,958,000, making in the aggregate 4,660,000 tons. On the Elbe at Schandau it amounts to 1,821,000, and at Hamburg 2,630,000 tons.

If the trade from abroad were deducted as well as on the Elbe, the movement at Hamburg corresponding to the movement of the Dutch Rhine ports, we arrive at the following result as showing the traffic for the basin of the Elbe, 5,252,000 tons; and for the Rhine, 4,840,000 tons. The comparison of the two rivers gives somewhat different results, if only the principal arteries are concerned, and excluding the subsidiary or feeding lines, for we then find the following results: for the Elbe 3,712,000 tons, and for the Rhine 5,960,000 tons. The tributaries of the Elbe show a total higher than that of the river itself, viz., 3,765,000 tons, while the traffic on the Rhine only amounts to 1,040,000 tons. It is Berlin with its river movement of 3,723,000 tons, made up of 3,085,000 tons entrances, and 273,000 tons clearances, and 365,000 tons transit trade, a movement exceeding in importance that at the port of Hamburg and the chief ports of the Rhine, which gives to the tributaries of the Elbe, particularly the Havel and the Spree, the superiority over the principal stream.

Compared with the traffic on the Elbe and the Rhine the movement upon the other waterways appears insignificant; the two first rivers absorb nearly nine-tenths of the trade, leaving to the others only about one-tenth of the total. It is only the rafts which are of any importance on the waterways of Eastern and Western Prussia. The Weser, Ems, and Danube hold the last rank. The movement of shipping is even relatively greater on the Lake of Constance than on these streams, but this may be accounted for by the fact that this lake constitutes, it may almost be said, an extension of the railways which abut upon it. Of the waterways of Eastern and Western Prussia, the Niemen and Vistula are the only ones the length of which is of any importance, but the misfortune is that the course of these streams in German territory is not a very extended one, and the foreign countries through which they flow are not sufficiently advanced, as regards their natural and industrial products, to justify them in devoting any considerable sums to the improvement and development of these ways of communication.

The traffic on the navigable streams of North Germany is of very much greater importance than that of South Germany, as the following table will show:—

	Tons (including Rafts).
North Germany—	
Basins of the Niemen, Vistula, Passarge, and Pregel	2,227,000
„ Oder	861,000
„ Elbe	7,767,000
„ Weser and Ems	394,000
Total	11,249,000
South Germany—	
Lake of Constance	338,000
Basin of the Danube	210,000
Total	548,000

As regards the navigation of the Rhine it should count for about two-thirds in the river navigation of the north to one-third of that of the south. On the lower Rhine the returns of the clearances at Bonn show a total of 5,000,000 tons, while the entrances amount to 2,500,000. It is the ports of Ruhrort, of Duisburg and Hochfeld, as well as the transit of goods from or for Holland, which assure to the lower Rhine its pre-eminence; the Southern ports, Mayence, Gustavsburg, Mannheim and Ludwigshafen remain in the background, although the most important tributaries, the Sarre, and the canal from the Marne to the Rhine, belong to the southern portion of the basin. The traffic of the Main is almost exclusively composed of rafts. In the basin of the Rhine there is no canal or subsidiary line to be compared to the Havel or to the Spree.

The total weight of goods carried amounts to 16,500,000 tons for North Germany, and 3,000,000 for South Germany. If we compare East and West Germany, it will be found that the former has the predominance, thanks to the Elbe and to the waterways of East Prussia, the traffic amounting to 11 millions of tons, while for the west, with the Rhine, Weser, Ems, Danube, and the Lake of Constance together, it does not exceed 8,500,000 tons. It is therefore the north-east district which holds the first rank, notwithstanding the fact that the chief river in Germany, the Rhine, belongs to the west.

The important part taken by North and East Germany in river and canal traffic, is due to the greater development of the navigable ways in that flat region where the waterways offer exceptional facilities for navigation, while the water courses of the south suffer the double disadvantages of too rapid descent and an insufficiency of depth.

Charles von Scherzer in his work entitled the *Economic Life of Nations*, estimates at 15,897 miles the length of the navigable ways (rivers and canals) of Germany. But this figure has only a theoretical value; it includes in fact a vast number of waterways of a purely nominal importance as regards shipping, and on which there is an almost entire absence of traffic. If only those waterways are considered on which transportation is regularly effected, and which in themselves count for more than nine-tenths of the general movement, the total length of the navigable ways is immeasurably inferior to the above estimate, and may be approximately stated as follows:—

	Miles.
Waterways of East and West Prussia	372
Basin of the Oder	497
,, Elbe	870
,, Weser	280
,, Ems	186
,, Rhine	931
,, Danube	248
Total	3,384

What is carried by waters other than the above is only of secondary importance, the rafts alone being worthy of mention. And even out of the 3,000 miles mentioned above there are some considerable extents which contribute little or nothing to the general movement. Of the 19½ millions of tons circulating on the German rivers and canals, 17 or 18 millions are carried over an extent of less than 2,500 miles, as the following will show:—

	Miles.
Waterways of East and West Prussia	370
Oder	370
Elbe	870
Rhine	750
Total	2,360

In the basins of the Elbe and the Rhine a traffic of 13 million tons is concentrated over an extent of 990 miles, 250 of which for the basin of the Rhine, and 740 miles for the basin of the Elbe.

So far as concerns the river and canal fleet, and the comparison of sailing with steam, statistics show results which are by no means conclusive, as no account appears to be taken of the foreign boats navigating German waters. On the Rhine, for example, there are numbers of Belgian and Dutch boats trading. In 1882 the German river and canal fleet appear to have been as follows:—

Basins.	Sailing.			Steam.		
	Number.	Total Tonnage.	Average Tonnage per Vessel.	Number.	Total Tonnage.	Average Tonnage per Vessel.
		Tons.	Tons.		Tons.	Tons.
Vistula	675	58,000	86·6	43	1,800	44
Oder	2,904	240,000	88·8	102	2,600	30
Elbe	9,000	760,000	84·4	338	13,250	52
Rhine	2,500	426,000	171·0	199	10,876	76
Rhine (including foreign boats)	(4,767)	(870,000)	(180·0)	(467)	(20,000)	42
Total (including other waterways)	17,885	1,625,000	90·0	830	33,000	53

The total tonnage therefore of the German river fleet is 1,658,000 metrical tons, or 1,242,000 tons Moorsom. It is equal in fact to the merchant navy, the tonnage of which amounted in 1882 to 1,194,000 tons Moorsom, and in 1885 to 1,294,000 tons. But, on the other hand, the mercantile steam navy amounted in 1882 to 251,000 tons Moorsom, while the corresponding tonnage of the river and canal fleet only reached 33,000 tons. If we take 4 sailing tons as being equivalent to 1 ton steam, which is by no means an over-estimate, we arrive at the following results for the German mercantile navy: In 1882, 1,947,000 tons Moorsom; in 1885, 2,535,000

Moorsom; while the total tonnage of the river fleet in 1882 was only 1,240,000 tons Moorsom. The comparison however is defective on two points; in the first place, in the river fleet are included the coasting boats of Frisches and Curisches Hoff, which have an average burthen of at least 10 tons (7·5 tons Moorsom), so that the total strength appears greater than it would be if only the river fleet, properly so called, were taken into consideration. Again, the advantages derived from the use of steam in internal navigation and in maritime transport do not readily admit of any comparison. Steam when employed in towing on rivers and canals, renders more important services than the actual tonnage of the tugs would lead one to suppose. Consequently the part taken by it in internal transport is of far greater importance than would appear to be shown by the preceding figures.

The number of steamers employed in the transport of merchandise, including steamboats, kedges, and tugs, is distributed as follows over the German waterways:—

Streams.	Number of Steamboats.	Indicated Horse Power.	
		Per Boat.	Total.
Vistula	21	70	1,442
Oder	75	53	4,025
Elbe	205	109	22,429
Rhine	132	280	37,251

As regards the number of horse power, the Rhine takes the lead, and this is only natural, seeing that foreign boats are much more frequently found on that river than on the Elbe. On the Rhine also it is found expedient to employ boats both larger and more powerful than on other rivers. Taking the average there are to each horse power 625 tons carried on the Vistula, 170 on the Oder, 333 on the Elbe, and 190 on the Rhine.

The figures relating to the Oder have only an insignificant value on account of the defective organisation of the statistical service on this river. The comparison between the Elbe and the Rhine turns in favour of the latter. On the Rhine only a very small proportion of goods escapes steam traction, and these are principally stones and minerals descending the stream. On the Elbe, there are considerable quantities of goods which do not take advantage of steam traction, going down the river. On the tributaries of the Elbe, Havel, and Spree, sailing vessels and barges predominate.

As regards the nature of the goods carried, the following results are shown:—

Articles.	Waterways of East and West Prussia.	Basins				Total.	Proportion per Cent. of Total Weight of Goods Carried.	
		Of the Oder.	Of the Elbe.	Of the Rhine.	Of other Streams		Rafts Included.	Rafts Excluded.
		Thousands of tons.					Per cnt.	Per cnt.
Coal, coke, &c.	226	240	1,416	3,600	24	5,506	28·5	32·5
Timber	1,200	260	850	730	225	3,265	16·9	5·1
Stones	128	63	1,400	530	134	2,255	11·6	13·3
Cereals, &c.	143	35	800	890	125	1,993	10·3	11·8
Minerals	—	2	9	393	8	412	2·1	2·4
Metals	31	58	205	310	31	635	3·3	3·8
Mineral oils	17	27	230	93	14	381	2·0	2·3
Cement, lime, &c.	17	8	720	293	27	1,065	5·5	6·3
Sugar	16	32	489	54	6	597	3·1	3·5
Total	1,778	725	6,119	6,893	594	6,109	83·3	81·0

It is coal and coke (28 per cent.) which constitute the most important part of the transports. On the Rhine these articles comprise almost the half of the total movement (3,600,000 tons); these are also of some importance on the Oder, where, with a total movement of 240,000 tons, these articles represent 27 per cent. of the traffic. On the Elbe they only count for 18 per cent. of the total traffic. Timber takes the second place, but its importance as an article of transport diminishes when travelling from east to west and from south to north. Stone and building materials form a considerable element in the traffic on the Elbe and its tributaries, this being accounted for by the very large consumption in Berlin of building materials, tiles, bricks, &c. Clay, cement, lime, cereals, vegetables, and leguminous plants are carried in very considerable quantities over the waterways of the basins of the Elbe and the Rhine. Metals, unwrought and wrought, and minerals are principally found on the Rhine, the Elbe, and the Oder, zinc predominating on the latter. Petroleum and mineral and vegetable oils belong more particularly to the basin of the Elbe.

Taking the trade of each stream, the articles enumerated above are distributed in the following proportions:—

Articles.	Waterways of East and West Prussia.	Oder.	Elbe.	Rhine.
	Per cnt.	Per cnt.	Per cnt.	Per cnt.
Coal, coke, &c.	10·1	27·0	18·0	47·0
Timber	53·0	30·0	10·9	9·6
Stones	5·7	7·3	18·0	7·0
Cereals, &c.	6·4	4·0	10·3	11·7
Minerals	—	0·2	0·1	5·2
Metals	1·4	6·7	2·6	4·0
Mineral oils	0·7	3·1	3·0	0·7
Cement, lime, &c.	0·8	1·7	8·3	3·1
Sugar	0·7	3·7	7·0	0·7

Of articles other than the above, there is nothing of any great importance with the exception of colonial produce, tar, pitch, resins of all kinds, asphalt, salted herrings, alcohol and wool; the two latter articles appearing principally in the basins of the Elbe and the Oder. Coal, timber, stone, grain, earth, minerals, lime and cement, form by themselves more than three-fourths of the total weight of goods carried over the German waterways, making an aggregate weight of 14,500,000 tons, or a proportion of 75 per cent. Leaving out what is carried by rafts, there remains a total of 12 millions, or 71 per cent. Iron, metals, petroleum and sugar count for 10 per cent. in the composition of the remainder of the traffic.

The following statement shows in thousands of tons the traffic on the German railways in the year 1886:—

Coal and coke	51,888,	=	48.5	per cent.
Timber	6,220,	„	5·8	„
Stone	8,101,	„	7·5	„
Grain	6,704,	„	6·2	„
Minerals	4,376,	„	4·0	„
Iron	6,766,	„	6·3	„
Other metals	292,	„	0·3	„
Petroleum, oils, &c.	700,	„	0·6	„
Cement, lime, &c.	3,085,	„	3·8	„
Sugar, molasses, &c.	1,537,	„	1·4	„
Total	90,665,	„	84·7	„

The total weight of goods carried over the German railway system in 1884 amounted to 107 millions of tons, or five and a half times more than the whole water carriage of the country.

Charles von Scherzer in the work to which we have previously referred, namely, the *Economic Life of Nations*, gives as the total amount of traffic on the English waterways, the development of which does not exceed one-sixth of the railway system, a total of from 30 to 35 millions of tons. For the United States the figure would be about 25 to 30 millions, and for France about 20 millions. A comparison therefore of the water and railway transports would be more favourable as regards the former in Germany than in England, and the actual result would be almost the same in France as in Germany. M. von Scherzer gives as the actual length of the navigable waters of England 2,980 miles, and the length of the French waterways as 2,794, the latter figure, however, does not at all agree with the extent according to the *Guide officiel de la navigation intérieure*, this publication giving the length of the rivers as 4,956 miles, and of the canals 2,955 miles, making a total of 7,911 miles. As however M. von Scherzer's figures only relate to the waterways actually available for navigation, it is only necessary to take into consideration those rivers and canals in Germany which are regularly navigated. The length of these ways is about 2,484 miles, with a traffic of at least 18 millions of tons. In England therefore there would be an average traffic of 9,662 tons per mile, in France 7,246 tons, and in Germany the same amount. In the latter country 126 million tons of merchandise are carried by water and rail, the proportion being 15·2 and 84·8 per cent. respectively, while a considerable part of the traffic has employed both methods of transport. This is particularly noticeable in the mining district of Ruhrort, towards the south of Germany, and it appears to be the general rule with the coal cargoes, exception being made of the Sarre coal, which is almost invariably shipped direct without passing over the railway system.

It would be by no means an over estimate to fix at from 8 to 9 millions of tons the traffic employing both water and rail. On the Rhine alone, over 5 millions of tons of merchandise are carried in this way. A reference to the subjoined table will show the distribution of the undermentioned articles over the railways and waterways, the articles in question representing a proportion of 83·3 per cent. of the transports by water and 84·7 per cent. of those by rail.

Articles.	Total Quantity Carried.		Proportion to Total Traffic.		
	By Water.	By Rail.	Waterways.	Railways.	Total.
	Tons.	Tons.	Per cnt.	Per cnt.	Per cnt.
Coal, coke, &c.	5,506,000	51,888,000	4·35	41·18	45·33
Timber	3,265,000	6,220,000	2·59	4·93	7·52
Stone	2,255,000	8,101,000	1·79	6·43	8·22
Grain, vegetables, &c.	1,993,000	6,704,000	1·58	5·32	6·90
Minerals	412,000	4,376,000	0·32	3·47	3·79
Iron and metals	635,000	7,058,000	0·50	5·60	6·10
Petroleum, oils, &c.	381,000	700,000	0·30	0·55	0·85
Cement, lime, &c.	1,065,000	4,085,000	0·84	3·24	4·08
Sugar and molasses	597,000	1,537,000	0·47	1·21	1·68
	16,110,000	90,669,000	12·74	71·93	84·67

The goods carried over the various railway systems, amounting in the aggregate to 107 millions of tons, are distributed over a network of 22,000 miles, that is an average of 4,864 tons per mile. The traffic on the waterways, amounting to 19 million tons, spread over an extent of 3,384 miles, gives an average of 5,623 tons per mile. Each ton of goods accomplishes on an average a journey of about 87 miles over the rails.

Inland navigation statistics do not show the length of the various distances traversed, but there appears to be a consensus of opinion that these distances are considerably longer than on the railways. On the Rhine, however, the traffic may be approximately estimated and followed. It comprises (1) the traffic between the Dutch ports and Germany; (2) the traffic between the lower and the middle part of the German Rhine; and (3) the local traffic between the small intermediate ports. This last branch, however, is altogether without importance, and may be left out of consideration. The traffic between Holland and the German ports embraces 4,500,000 tons, and the shortest transport effected is that from

Ruhrort-Duisburg to Rotterdam, a distance of 133 miles. Very considerable quantities of merchandise are carried from Rotterdam to Mayence and Mannheim, and it is by this route that the important grain trade of Mannheim, and Ludwigshafen is carried on. The shipments from the ports of the lower Rhine are partly consigned to Dutch or Belgian districts, and partly to Mayence, Gustavsburg, Mannheim and Ludwigshafen; the intermediate districts, Cologne, Coblenz, &c., retaining very little of the traffic. The greater part therefore of the transports on the Rhine are effected over an extent of from 125 to 350 miles, of which 125 miles are comprised within German territory.

The 3,250,000 tons of coal shipped from the ports of Ruhrort, Duisburg, and Hochfeld in 1884, comprised 1,375,000 tons for Holland, and 800,000 tons for Mayence and Mannheim. It follows therefore that there was an average distance of 120 miles traversed on German waters, while on the other hand the railways carried goods to a distance varying between 5 and 30 miles, or an average of 17 miles. On the Elbe the comparison is equally in favour of water transport. From the Austro-German frontier to Hamburg the distance is 404 miles; the distance from Hamburg to Dresden is 360 miles, from Hamburg to Magdeburg 186 miles, and from Hamburg to Berlin 248 miles. A considerable proportion of the goods passing the frontier descends the Elbe as far as Hamburg; 366,000 tons of lignite from Bohemia have penetrated as far as Magdeburg (217 miles), and 211,000 tons to the Havel (248 miles). In the contrary direction, almost all the consignments from Hamburg (1,400,000 tons) were in the direction of Berlin and the Oder, or towards Magdeburg, Dresden, and Bohemia.

A considerable proportion of the traffic of the Havel and the Spree was effected over very short distances. Building materials which are sent to Berlin come for the most part from brickfields situated at a distance from that city of from 30 to 90 miles. In the same way the large quantities of timber taken by Berlin come from neighbouring districts, and the same may be said of the grain, vegetables, seeds, coal, and coke, &c., forwarded to that destination. The average distance that goods are carried on the basin of the Elbe may be approximately estimated at 124 miles, while the distance is considerably greater on the basin of the Oder, since the principal traffic is between Breslau and Stettin (347 miles), Breslau and the basin of the Elbe, and Stettin and Berlin (130 miles). For water carriage therefore the average distance traversed may be taken as at least double that of railway transport, which is in itself a proof that even the nature of the navigable ways renders them more suitable for long journeys.

It results from the foregoing that from the point of view of the distance traversed, inland navigation in Germany is of far greater importance than the tonnage returns and the comparison of these returns with those of the railways would appear to show.

The following tabular statement shows a comparison of the two modes of transport for a certain number of principal cities:—

Cities.	Number of Inhabitants.	Goods Carried			Number of Tons per Head of Population.
		By Rail.	By Water.	Total.	
		Tons.	Tons.	Tons.	Tons.
Berlin	1,200,000	3,504,000	3,348,000	6,852,000	5·71
Breslau	270,000	1,237,000	350,000	1,587,000	5·88
Hamburg	410,000	1,191,000	3,221,000*	4,442,000	10·7
Magdeburg (including Buckau and Neustadt)	165,000	1,650,000	1,118,000	2,768,000	16·7
Dresden	220,000	1,411,000†	534,000	1,945,000	8·8
Bremen	112,000	776,000	184,000*	960,000	8·5
Ports of the Rhine (Ruhrort, Duisburg, & Hochfeld)	70,000	5,427,000	4,107,000	9,554,000	136·0
Cologne (including Deutz)	160,000	1,320,000	314,000	1,634,000	10·0
Mannheim and Ludwigshafen	75,000	1,776,000	2,041,000	3,817,000	50·0
Leipzig	160,000	1,675,000	—	1,675,000	10·0
Hanover (including Linden)	150,000	912,000	—	912,000	6·0
Munich	230,000	1,252,000	—	1,252,000	5·4

* Not including sea tonnage.

† Exclusive of arrivals and departures by rail from Dresden to Breslau.

Deduction being made of places such as the ports of the Rhine, Rurhort, Duisburg, Hochfeld, Mannheim, and Ludwigshafen, which considerably exceed the average by reason of the traffic being entirely in transit, it will be seen that the differences are not of any considerable extent. Magdeburg heads the list, this being an important market; the other cities varying between 5 or 10 tons per inhabitant. It cannot be said that places like Hanover, Leipzig, Munich, and Bremen, which almost exclusively, or at any rate most frequently use the railways, compare from a general commercial point of view unfavourably with those which are fortunate enough to have water communication. Relatively to the goods traffic Leipzig surpasses Berlin, Breslau, and Dresden, Munich alone remaining in the background, while Hanover keeps on a level with Berlin and Breslau.

As a consequence of the comparison of the traffic by rail and water, it may be laid down as a general principle that there is no essential difference between the two modes of transport as regards the value of the articles carried. Both by rail and water, goods of small value preponderate, but this preponderance is much more marked on railways than on waterways. The latter are not limited in their choice of goods, as is generally supposed; soft goods in bales, and articles of value form no inconsiderable part of their transports. The traffic on the Rhine in grain, vegetables, flour, &c., in spite of the favourable conditions under which those goods are carried on German railways, increased from 156,000 tons in 1872, to 810,000 tons in 1883, thus following an ascending scale much more rapid than that which would result normally from the increase of the population in the industrial centres traversed. A similar increase is also observable at the port of Hamburg. During the period comprised between the years 1851-60, the annual arrivals at Hamburg by the Elbe averaged 206,000 tons of goods, of which 18,700 were in bales, or a proportion of 9 per cent. The departures from Hamburg during the same period averaged 300,000 tons, 56,000, or 18 per cent., of which were in bales, making together a total of 506,000 tons, of which 74,700 or 14·7 per cent. were in bales. In 1885 the arrivals amounted to 1,234,000 tons (666,000 tons in bales or 54 per cent.), and the departures to 1,180,000 tons (474,000 tons in bales or a proportion of 40 per cent.).

It will be observed then that the transport of goods in bales, most frequently valuable articles, has shown an increase three times greater than that of the whole river trade of Hamburg. Among the more valuable goods carried by water may be cited mineral oils, and it is to the facilities given, thanks to the Elbe, to the transport of these products that Hamburg has taken the place of Bremen, formerly the first in Germany and in the European continent for petroleum. In 1884 the shipments of mineral oil from Hamburg exceeded by 17,000 tons those from Bremen. In certain ports it happens that valuable goods more frequently take advantage of the waterways than the railways. Berlin, for instance, received in 1885 150,000 tons of cereals and vegetables by rail, and 250,000 tons by water; 760 tons of rice by the former, and 2,400 tons by the latter. In the same way Mannheim-Ludwigshafen received in 1884 5,000 tons of mineral oil by rail, and 24,000 tons by water, and 200 tons of rice by the former, and 4,500 by the latter. These examples may be multiplied, and they are sufficient to show, (1) that the waterways, contrary to the general opinion, participate to a considerable extent in the transport of costly merchandise; (2) that this participation has up to the present been steadily increasing; (3) that this fact is not to be accounted for solely by the increase in the general traffic, but by the preference accorded to water carriage, as it offers greater economy than any other mode of transport; and (4) that this diversion of traffic applies to those articles which have the longest distance to traverse.

The increasingly important part taken by German navigable ways in the transport of merchandise is due partly to the action of the State, and partly to the natural causes of expansion. The action of the State has been manifested in two ways: by the execution of improvement in the water ways, and by the erection of ports and quays at the most important points. The many millions that the German States, commencing with Prussia, have devoted during the last fifty years to the improvement of rivers and streams have had a result, the more advantageous as various legislative measures have been passed with a view to lighten the burdens imposed upon river and canal navigation, amongst others, Article 54 of the constitution, which removed the taxes hitherto levied upon the fleet for the interest and repayment of the capital engaged.

The tonnage of the river and canal fleet increased in the short space of time between 1877 and 1882 from 1,377,000 tons to 1,658,000 tons; the number of steam vessels which in the former year amounted to 463, rose to 830 in 1882, this being the latest year for which any reliable information on this point is available. The average tonnage of the sailing vessels was as follows for 1872 and 1882: on the Oder, 77 and 89 tons; on the Elbe, 75 and 84; and on the Rhine, 130 and 171 tons.

The facilities afforded to the handling of goods have counted for much in the development of the traffic of the waterways. By lengthening to a considerable extent the ports and quays, and by erecting powerful machinery, the delays of loading and unloading have been sensibly diminished. The three ports of the Lower Rhine, Ruhrort, Duisburg, and Hochfeld having a length of quay of about 50,000 feet, and abundantly supplied with machinery for loading, steam cranes, weighing machines, and coal shafts, have an annual traffic of from 4 to 4½ millions of tons. On the Elbe there are a larger number of ports furnished with the necessary machinery, but these ports have not the same importance as those of the Rhine. Dresden, Riesa, Wallwizhaven, Magdeburg, and Hamburg enjoy these advantages, and are directly connected with the railways. At Hamburg, the most important port on the Elbe, it is of more importance to assure the relations between the sea and river navigation, the requirements of which are very different, than to assure the communications between the river and the railways. The quays and depôts of Berlin are quite insufficient for commercial requirements. On the Oder much has been done to place the river in communication with the railway. The most important work is to be found at Breslau, where machinery constructed on the model of that in the Rhine ports has been erected. All these improvements have been effected either by the State, by the communes with State aid, or again by private companies.

On the other hand the employment of steam has in some measure been instrumental in regenerating the river and canal navigation. With the old sailing boats the average distance covered per diem was 19 miles at the most, taking into account the delays occasioned by contrary winds. The steam towage on the Rhine is effected at the rate of 3 miles an hour up, and 6 miles down, or an average of 4½ miles, making for a navigation of fifteen hours 67½ miles, that is nearly four times the old speed. The steam carrier has a speed of 6 miles an hour up and 9 miles down, or an average of 7½ miles; it covers a distance of from 112 to 124 miles per day. If the tug boat be assimilated to a regular goods train, and the steam carrier to a direct goods train, it will be found that the speed at which inland navigation is effected is sensibly inferior to that of the railway. A goods train, even when heavily loaded, covers a distance of from 180 to 250 miles in twenty-four hours, while a direct goods train might even cover double this distance. As regards delays in the delivery of goods, canals and rivers compare very favourably with the railways; river navigation is concentrated on a certain number of ways, over which a heavy traffic passes, and is effected between a limited number of important ports, sufficiently distant one from the other. The river and canal navigation moreover is but little obliged to stop at night. It is far different with the railways; even on those lines on which the traffic is heaviest, account must be taken of the frequent stoppages at the intermediate stations, for loading and unloading goods, coupling or uncoupling trucks, changing engines or men, taking in coal or water, and shunting to allow passenger trains to pass. These different circumstances considerably lengthen the duration of the journey by rail. Transport by rail then as compared with that by water does not enjoy the advantage that the greater rapidity of traction would assure to it.

The facts which we have enumerated above have in great measure contributed to the development of steam navigation, and have produced this result, that instead of being completely crushed by the competition of the railways, the river and canal fleet has succeeded in taking from the latter a considerable portion of the traffic. The rapidly extending employment of steam as a motive power has given to the traffic of the Rhine and Elbe its present importance, and has stimulated the development of that of the Oder. Where navigation is effected principally by sailing and rowing boats, as for example on the Spree and the Havel, only raw materials of small value are carried, such as earth, stone, wrought or unwrought, lime, &c., goods which even going down the Rhine are seldom carried by steam vessels. Not only has navigation gained in speed, regularity and continuity by the employment of steam, but it has also made considerable progress from the point of view of cheapness. The initial expenses of building, as well as the working expenses, interest, and repayment of capital are distributed over a much greater tonnage, so that the actual ton mile corresponds to smaller expenditure for steamers than for sailing vessels. Again, thanks to the use of steam, a vessel can accomplish twice or even three times as great a number of voyages; it may also have a much greater carrying capacity. This increase of tonnage, added to the facilities afforded to the loading and unloading of goods, has had the effect of reducing freights by a fourth, and in some cases by half.

The position is the same for maritime navigation, and the fall in the rates of freight has even been accentuated by the stagnation of trade. Of one fact there can be no doubt, that is, that freights have sensibly diminished since the development of steam navigation.

The daily expenses are in the case of the largest steamers at the rate of about 6*d.* per ton register; as these steamers cover a distance of from 190 to 250 miles a day, the expenses of transport properly so called amount to about ·03 of a penny per ton and per mile, a figure which, taking into account the stoppages at the various ports, comes to ·05 of a penny. Between North America and Germany, a distance of from 3,100 to 3,730 miles, a ton of grain is carried for 10*s.*, or ·04 of a penny per mile. In some years however the cost is double.

Coal freights between England and the North Sea (434 miles from the east coast of England, and 870 from the west) rule at about 4*s.* 10*d.*, or ·12 of a penny per ton and per mile; between the ports of the North Sea, the Prussian and Russian ports of the Baltic (810 and 1,500 miles), they amount to 5*s.* at the most, or from ·04 to ·08 of a penny per ton per mile.

The fact that river and canal navigation uses the navigable ways free of cost, and has only to provide itself with the means of traction, places it in a position to compete favourably with the railways, provided always that the latter are desirous of paying a dividend. Inland navigation has this in common with maritime navigation, that the rates of freight are calculated on a much lower basis for long than for short distances; that the possibility of rapidly loading and unloading has a considerable influence on the question, and finally that the prospect of a return freight considerably lowers the cost of transport. Consequently the rates attain their minimum when it is a question of two important commercial centres, between which there is a regular traffic, and which are supplied with the necessary machinery for loading and unloading. In the matter of river navigation, the time necessary for the transport, and for loading and discharging, is a very important factor, and its duration exercises a considerable influence upon the rates of freight. As regards steam navigation the rates can be fixed on a firm basis, and deduction being made of free competition to which the different river and canal navigation is subjected, it is the consideration of a return freight which is the controlling element in the variation in the rates of transport by steam between any given ports.

In determining the rates for river and maritime navigation it is not necessary to take into consideration the value of the goods carried, the most complete utilisation of the capacity of a vessel being the principal point, it matters little whether it be with coal, sugar, or grain with which it is loaded.

The more or less dangerous character of the goods, which plays in maritime navigation a very important part, and which influences in a marked degree the conditions of assurance, is only a matter of very secondary consideration in river and canal transport. Coal which on long sea voyages is sometimes a dangerous cargo, by reason of its inflammable nature, is not considered more dangerous for river than for railway transport—and the same may be said of petroleum. If internal navigation applies higher rates to articles of value which are in other respects susceptible of easy transport, this is owing to causes essentially commercial. It is that in order to attract this class of goods there is no necessity to make any concessions in the rates of freight. Railway competition is not formidable, and the river and canal fleet desirous of keeping down the cost of transport of heavy goods, is only glad to be able on occasion to look for and find its compensation in other articles.

Finally, river and canal navigation offer three methods of transport with different rates, as follows: (1) Transport by steam carriers; (2) transport in barges towed by steam; and (3) transport by sailing ships. The first is on an average from twice to four times dearer than the second; navigation by sailing ships is partly dearer and partly cheaper than towing. It becomes cheaper when it is a question of carrying down the rivers goods of little value, which have not to make long journeys; and that is because the use of steam would not prove sufficiently renumerative on account of the shortness of the distance to be traversed, of the current, and the inadequacy of the machinery for unloading. It is on the other hand dearer when navigation is effected up stream. As regards the second mode of transport, account must be taken of the composition of the train of barges, and the nature of the boats towed, their dimensions, and the nature of their construction, whether with or without decks, of iron or of wood. By reason of the guarantees of solidity and security afforded by their construction, iron vessels are able to command a higher rate of freight, and moreover they are better managed.

As we have already observed, the dimensions of the vessels is an important factor in determining the cost of towage. A limited number of large vessels admits of the realisation of a more important increase of carrying power than a large number of little boats. An iron lighter of 500 tons burthen pays at the most per ton and per mile two-thirds of the cost of towage that a wooden vessel of 100 tons would have to pay.

As far as it is possible to judge, with the perpetual fluctuations in the rates of freight, the inland navigation rates are established as nearly as possible according to the following scale: (*a*). Goods of every description in bulk, loaded on boats and towed in trains, ·18 to ·29 of a penny per ton and per mile; (*b*). Goods in bales, towed in trains, from ·06 to ·09 more, or ·24 to ·38 of a penny per ton and per mile; (*c*). Goods in bales, carried by steam carriers, ·39 of a penny to 1*d.* per ton and per mile. On canals and canalised rivers the tariff may be taken as follows: for class *a*, from ·23 to ·34 of a penny; for class *b*, from ·30 to ·48 of a penny; while as regards the third mode of transport this is rarely employed on these waterways.

As compared with this tariff, which is comparatively simple, with its two or three categories, the goods tariffs of the railways appears very complicated, owing to the number of different classes. In addition to the regular tariffs for the quick service of trains, there are two general classes of waggons and four special classes, and moveover each line of railway has a number of special tariffs. The rates according to the general tariffs vary between ·35 of a penny and 4¼*d.* per ton and per mile, that is from two to four times higher than the rates by water. In the special tariffs the rates range from 2·36*d.* per ton and per mile (for goods in bales) to ·57 of a penny (exceptional rates for loads of 10 tons and above). That which constitutes a considerable advantage from a tariff point of view in favour of the navigable ways, is the circumstance that these tariffs are not influenced by the value of the goods carried. In the same class will be found such articles as raw iron, minerals, cereals, and petroleum, while for the same description of goods carried by rail, the rates would vary from ·41 of a penny to 1·16*d.* per ton mile.

Taking into consideration the fact that the transport of the mass of goods, including heavy bales, can be effected by river navigation at prices varying between ·18 and ·29 of a penny, and by canal and canalised rivers at from ·24 to ·38 of a penny, it is not surprising that for valuable goods a preference is shown for water over railway transport. The transport of the mass of goods of little value costs on the average by water only half what it does by rail, while on the other hand goods belonging to the class of special waggons, such for example as petroleum and refined sugar, or to the special tariff No. 1, such as cereals, the natural waterways carry them at about a third or a quarter of the price at which they would be conveyed by rail. Artificial waterways carry the mass of cheap goods for two-thirds of the regular railway tariff, and valuable goods for a third or a half of this tariff.

There is however one circumstance which prejudicially affects the cheapness of water transport, that is the necessity which almost invariably exists for the conveyance of the goods for a certain distance over rail or road. In some cases the possibility of carrying the goods up to the very gates of the warehouses themselves is in itself a sufficient reason for the preference to be shown to railways. Again, in the case of coal carried from the Ruhr in the direction of Holland. The places to which it is carried are easily accessible to the river fleet, particularly Rotterdam, Amsterdam, Dordrecht, &c.; the freight is low, and, including even the journey by rail, the total cost of transport does not amount to more than 3*s.* per ton, while by rail all the way the cost would be at the least 4*s.* 2*d.* per ton. And yet the railways monopolise the greater part of this traffic owing to their punctuality, particularly in the case of the coal intended for exportation by sea.

The natural waterways, which during the greater part of the year enjoy the advantage of a depth of water sufficient for the navigation of steam boats and tugs, are in a position to favourably compete with the railways as regards cheap transport, and their superiority increases with the value of the goods carried and the length of the distance traversed. The advantages of artificial canals and canalised rivers while still great are rather more restricted. The principal cause however of the dearness of transport by rail lies in the fact that the railways must not only cover their cost of working, but must realise sufficient to pay the interest on the capital engaged. The movement of passengers is barely sufficient to realise an excess of receipts over expenditure, and it is therefore to the goods traffic that the railways look for their profits. For the German railways, the capital of which represents a value of more than 480 millions sterling, a sum must be found annually equivalent to that which per ton mile carried would represent an expenditure of ·40 of a penny, or a sum nearly equal to the cost of traction. To lower this tariff would be to run the risk of serious complications and a certain deficit; moreover, it would be dangerous to recommend the adoption of measures tending to the augmentation of the cost of water transport through the medium of a navigation tax with a view to a reduction of the advantages of these competing lines. On the Rhine and the Elbe the treaties in force would be a bar to the adoption of such a measure as the above, which on the other waterways would not only prove vexatious, but moreover useless. What, on the other hand, would be a legitimate policy would be not to further undertake on the navigable ways any works other than those of real importance, and the execution of which would ensure a sufficient return upon the capital engaged.

The cost of transport constitutes an important element in the composition of prices. One of the most important articles, namely iron unwrought, has from 20 to 30 per cent. of its cost price represented by the expenses incurred in bringing up coal, ore and lime, and yet the metallurgical industry is hardly ever found elsewhere than in the vicinity of coal fields and ore beds. It is the same thing with coal, the intrinsic value of which is often lower than the cost of transport, by reason of the exceptional situation of the two basins of the Ruhr and Upper Silesia. It may be taken generally that German coal can be carried a distance of from 110 to 190 miles for 7*s.* 4*d.*, and 310 miles for 12*s.* 2*d.* The railway tariffs fix for the transport of cereals over an average distance of 500 miles the rates at from 43*s.* to 50*s.* per ton, or about 30 per cent. of the intrinsic value at the place of production. According to the above one would be almost led to believe that a diminution in the cost of transport would be an economic advantage of the very highest importance, the realisation of which should be striven for even at the cost of considerable sacrifices. And yet this is not absolutely the case. Before everything, it is necessary to inquire if the benefits resulting from a lowering of the rates would have a general character, or if at least this diminution would benefit the majority of the national interests. If this is not so, if it is not to the advantage of the many, but only of certain groups, circles, and regions, the gain to the one would be the loss of the other, and the economic advantages would be considerably diminished. It may even happen that the disadvantages resulting from it would be greater than the advantages obtained, and that the displacement of commercial currents would have for certain districts disastrous effects, which would not be compensated by the benefits gained by others.

The excessive production of industrial districts has determined the currents of exportation which have brought about the depreciation of nearly all the agricultural or manufactured products. Maritime navigation has also borne its share in effecting the result to which we have referred. It has in consequence found itself under the necessity of giving up the enormous profits that it has been in the habit of making, and of carrying goods at cheap rates hitherto unknown. On the other hand the minimum tariffs of maritime navigation encourage exportation, and foreign industrial products inundate the markets, where they strive for the first places, forcing the national producers, if they desire to still supply their own consumers, to sell their products at a lower rate than that quoted by their rivals. Those engaged more particularly in the industries of agriculture and sylviculture have followed the example of the industrial nations, and have consigned to the latter their surplus cereals, cattle and timber, in such quantities that the actual requirements are often exceeded; the prices have fallen, and the agricultural and sylvicultural industries of industrial nations have suffered keenly from the competition.

It will be seen therefore that the diminution in cost of transport may under certain circumstances be productive of more harm than good. In Germany it certainly has had the unfortunate result of entirely nullifying schemes for the effectual protection of national labour.

If we consider the movement of goods carried in one direction or another on the Rhine, Elbe, or Oder, it is difficult to come to any other conclusion than that the traffic of these navigable ways owes a part of its success to circumstances absolutely opposed to the general policy in the matter of exchanges. In 1884 there were brought into the States of the Zollverein 2,775,000 tons of cheese, barley, rye, oats, maize, and vegetables, of which 1,575,000 tons, or 56 per cent. of the total importation, came by the Rhine, the Elbe, and the Oder to Emmerich, Hamburg, and Harburg, by the Finow and Schandau Canal. By the Rhine and the Elbe these products were sent away to an extent representing a proportion of 44 per cent. of the total exports.

As regards timber for building purposes. 1,946,000 tons came into the Zollverein in 1884, and 593,000 tons left it. The actual part taken by the navigable ways in this traffic cannot be absolutely determined from these figures, as some considerable quantity of goods were simply in transit. It may however be estimated that the quantity entered by water amounted to 1,126,000 tons, and 218,000 were exported by the same route. The principal imports have been effected by the Vistula (524,000 tons) and the Niemen (500,000), and the exports by the Rhine (124,000 tons), and the Elbe (68,000 tons). The Niemen has principally carried timber in transit, while the Vistula, on the contrary, has imported the greater part of these cargoes. They principally come from Poland and Galicia, while only a small proportion reach Stettin and Hamburg for export by sea. Of the total imports of timber, amounting to 1,900,000 tons, the navigable waterways count for about a third, the rest being brought by sea, only 300,000 tons being accounted for by rail. The imports of timber by water therefore represent double the quantity of that brought by rail, while only considering as regards this article the general traffic by navigable waterways and railways—3,265,000 tons for the former, and 6,220,000 for the latter—we find the proportion absolutely reversed.

The imports and exports of coal and coke during the year 1884 by water and by rail was as follows:—

[In thousands of tons.]

	Imports.	Exports.	By Water.		By Rail.	
			Imports.	Exports.	Imports.	Exports.
Coal	2,296	8,816	942	2,262	374	6,662
Coke	123	670				
Lignite	3,466	—	1,300	—	1,533	—
Total*	5,885	9,486	2,242	2,262	1,907	6,662

* The discrepancy between the total of the entrances and of the clearances, and the addition of the amounts brought and despatched by water and land, may be accounted for by the fact that Luxemburg, which is taken as forming part of the Zollverein, is at the same time considered, from a commercial point of view, as a foreign country.

From the above it will be seen that the navigable waterways have borne the largest share in the importation of coal and coke. Taking however the general traffic, the railways have carried ten times more coal and coke than the waterways, the actual figures being 51,000,000 tons by the former, and 5,000,000 by the latter. The largest imports are effected by the Elbe and the Oder, 40,000 and 430,000 tons respectively, and the Vistula 170,000 tons. The Rhine is employed for the exports to the extent of 2,190,000 tons. In the export of iron, the railways count for nine-tenths of the unwrought and five-sixths of the wrought, while the waterways retain the greater part of the import trade in ores and pig iron.

For many and valid reasons the navigable ways are more frequently employed for imports than for exports, and looking at the question from the standpoint of the protection of national industry, they are productive of more harm than good. For other industries the effect they exercise from an export point of view is more favourable, for example, the sugar industry utilises them for their consignments abroad almost in the same proportion as the railways. Zinc and lead frequently take advantage of the waterways for the carriage of their exports, and it is evident that there are many other industries which derive considerable advantage from the cheapness of the transport and their favourable position upon the waterways.

And yet in face of the statistics we have quoted, it is almost impossible not to recognise the fact that the general opinion as to the value of waterways as an instrument of wealth proceeds partly from erroneous ideas, and that the influence attributed to this mode of transport not only from the point of view of the facilities accorded to national production, but also of the outlets open to commerce, is not always justified by facts. There is undoubtedly some show of reason in the numerous arguments at present put forward in favour of the advantages to be derived from the various canals, the execution of which is so anxiously demanded. The establishment of these new ways ought, we are told, to reduce the cost and selling prices to a rate impossible to be attained by the railways, and thereby would powerfully stimulate the national industry. Undoubtedly the canal from the Rhine to the Ems, with a junction to the canal from the North Sea to the Baltic, as well as the canal from the Oder to the Spree, would be productive of all the advantages attributed to it, and that even without detrimentally affecting the higher interests of the country. By the first of these ways the basin of the Ruhr would very speedily find the facilities for placing goods on the German markets of the littoral, and also in the Russian and Scandinavian ports, and for export generally greatly increased. And besides, all the operations of import and export as regards the industries of the Ruhr would be effected by German in preference to foreign ports. The canal from the Oder to the Spree, the national result of the improvement of the Oder, will give to the industries of Upper Silesia the navigable way of access to Berlin, the want of which has been so long felt.

But, on the other hand, the advantages anticipated from the establishment of a number of other ways are either insignificant or absolutely counterbalanced by such serious economic disadvantages, to such a degree that one is forced to seriously inquire whether it is for the general interests that these works should be undertaken, and if undertaken, whether it should be with State aid. In this connection we may mention the canalisation of the Moselle from Metz to its mouth, a canalisation ardently desired by those interested in the industries of the Ruhr. The work would have for its object the transformation of a river which suffers particularly from an insufficiency of water, and the rendering of it capable of accommodating the largest Rhine boats, even those with a burthen of 500 to 1,000 tons, and having a draught of water of from 5 to 6 feet. The transformation would be effected by the aid of important works, consisting principally of locks, in fact the proposal is to distribute 32 locks over a distance in round numbers of 200 miles. It would appear however that the hopes founded by the industries of the Ruhr upon the canalisation of the Moselle are illusory, and by reason of the doubtful success of the project, the Government would do well to seriously consider whether the national finances should be devoted to such an enterprise.

In the bill of the 9th July, 1886, respecting the construction of fresh waterways, it was the junction of the Rhine with the Weser and the Elbe, and the improvement of the Oder up towards Breslau that was in question. In the first project it was proposed to establish, starting from the canal from the Rhine to Ems near Munster, a junction towards Bremen and Hamburg, and another way, separated from the first below Osnabruck, passing above Hanover and rejoining the Elbe in the environs of Magdeburg. The improvement of the Oder towards Breslau would consist in the canalisation of that part comprised between Breslau and Kosel about 93 miles, which would bring the industries of Upper Silesia nearer to Breslau by 74 miles.

As regards the question of the importance of artificial waterways, there is very little doubt that as soon as these latter cease to be short links, intended to connect between themselves the

Google

different systems of natural waterways, for example the junction of the Oder with the Havel and the Spree, but constitute important lines, with their own individuality, they cannot compete as regards the cheapness of transport with the natural waterways, even if the State be disposed to cover by the imposition of taxation the cost of maintenance. The natural lacuna in the matter of traffic by water would be less satisfactorily filled by the opening of an artificial way than by the establishment of a railway. Moreover artificial ways have a much greater difficulty in adapting themselves to local circumstances. As a matter of fact the principal sources of traffic, the industrial regions with their mines and minerals, are more frequently far from being favourable to the establishment on the spot of navigable ways. Traffic by water has therefore a natural propensity to concentrate itself in certain regions even more so than the traffic by rail.

To sum up, public opinion in its infatuation for canals and improvements of natural waterways does not take sufficiently into account the true influence that navigable ways may exercise upon the economic condition of the country. The happy effects that one has a right to expect from the opening of these ways upon the development of public prosperity, are frequently nullified by the obstacles placed in the way of the production of certain basins. It may be laid down as a general rule that it is rather importation than exportation that is benefited.

These two circumstances, properly appreciated, considerably diminish the economic value of a certain number of waterways, the execution of which appears to be so ardently desired.

VI.—*Statistics of the Russian Empire.*

The following is taken from the *Times* of the 23rd May. It refers to the first number of a new serial—*Annuaire Statistique de la Russie*—and will be found among the "Additions to the Library" given on a subsequent page of the present number of the *Journal.*

"An official report, drawn up by M. Troinitsky, on the general condition of Russia in 1884-85, gives the following interesting statistics:—

"The population of the empire at that date amounted to 109 millions, the male sex slightly exceeding the female. The density of population was as follows: 19·3 per verst[61] for the 50 governorships of European Russia; 71·4 for Poland; 17·9 for the Caucasus; 0·4 for Siberia; 1·8 for Central Asia; and 7·6 for Finland. There were 1,300 towns and 524,000 other inhabited localities. Four towns contained a population exceeding 200,000, nine more than 100,000, and 23 over 50,000. The annual total of births averages 3,400,000, of which 2·6 per cent. are illegitimate. The death total is 2,500,000. In 1885, there were 867 hospitals in towns, with 47,000 beds, and 800 country hospitals, with 11,000 beds. Lunatic asylums, of which there are 77, with 15,000 inmates, are not included in this total. The rate of mortality in the latter is about 11 per cent.

---

[61] Verst [square] = 0·44 square mile.

"With regard to the work of the hospitals more than 11,000,000 sick persons were supplied with medicine. The number of vaccinations was 2,300,000. Of infectious diseases typhus claims the first place—162,000 cases, with a mortality of 10 per cent., but diphtheria (35 per cent.) and hydrophobia (52 per cent.) showed a higher rate of mortality. The statistics for the empire are admitted to be uncertain and incomplete, for registration is very imperfectly conducted outside the European territories. Of deaths by violence 35,000 out of 46,264 were males, and of 2,661 suicides, only 636 were women. There were rather more than 1,000,000 immigrants (733,000 being men), and 921,500 emigrants (670,000 being men). On the 1st of January, 1886, there were 101,000 prisoners of all kinds, and of these 8,000 were women. Of 853,000 young men eligible for military service, only 228,000 (74 per cent. of whom were Russians) were enrolled. Of the conscripts 26 per cent. could read, and 29·7 per cent. were married. The food supplies consisted of 49 million roubles[62] in kind and 31·4 million chetverts[63] of grain. The harvest of the 50 governorships amounted to 288 million chetverts of all crops, and of these the peasant lands produced 70 per cent. There were 52,000 fires during the year, causing damage to the extent of 87 million roubles, and accompanied by a loss of life to 1,129 persons. There were 17 assurance societies, with a capital of 26 million roubles, and an amount assured of 5,419 million roubles. Twenty-four million roubles were paid in compensation by these societies, in addition to the 15½ millions paid by the mutual assurance of the province, the Zemstvo[64] and the town. The produce of 83,182 factories, with 1,100,000 workpeople, was valued at 1,307 million roubles. As a rule there is twice as much hand labour in Russia as in Poland. Two thousand three hundred and seventy-seven distilleries produce 33,600,000 vedros[65] of alcohol, and of these 11 per cent. were exported. Twenty-eight million vedros of beer were exported from 1,870 breweries. Of wine and spirit shops there were 132,000 in the empire, and of beer 7,734. Of sugar refineries there were 245, with a production of over 21 million pouds.[66] Tobacco was cultivated over an area of 58,000 deciatines,[67] and these distributed 3,200,000 pouds to 394 factories; after exporting 250,000 pouds there remained an average of 1·14 lb. per head of the population for home consumption. The State receipts amounted to 837 million roubles, of which 180 millions only were derived from direct taxation. The State debt was 4·65 milliards of roubles, with an annual charge of 262 millions. The town revenues in 1870 amounted to 17 million roubles, and in 1884 to 42 millions; but in the same period the expenditure rose from 19 to 46 millions. The amount invested in railways was 2,800 million roubles, and the net revenue they produced amounted to 87,400,000 roubles. Postal routes covered 168,000 versts, and 17,000 *employés* were engaged in 4,830 offices. The number of postal despatches was 303 millions, and the revenue from postage stamps 8 million roubles, but still a deficit remained of 800,000 roubles. The merchant fleet was composed of 2,992 vessels, of which 360 were steamers, and divided among the following seas: 687 for the Baltic, 246 for the White, 732 for the Black, 517 for Azof, 789 for the Caspian, and 21 for the Pacific. Places of public instruction numbered 41,492, with 2,500,000 pupils, including 639,000 girls. There were eight universities, with 13,000 students. In the European provinces there were 38,531 orthodox churches, with 44,559 clergy of the church and 6,442 monks. Catholic churches numbered 1,287, Protestant 708, Armenian 37, Jewish synagogues 349, and Mahomedan mosques 3,957. In the European provinces of the empire there were 474 printing presses, 270 lithographing establishments, 425 typo-lithographing establishments, 710 photographers, 509 booksellers, and 545 libraries."

---

[62] Rouble = (gold) 3*s.* 2·054*d.* (paper) about 1*s.* 8*d.*

[63] Chetvert = 5·77 imperial bushels.

[64] Zemstvo (provincial assembly).

[65] Vedro = 2·7 imperial gallons.

[66] Poud = 36 lbs. avoirdupois.

[67] Deciatine = 2·7 acres.

VII.—*Notes on Economical and Statistical Works.*

Observations on the Connection between Gold, Credit, and Prices. By T. H. Farrer. London: Spottiswoode and Co., 1887.

In this long memorandum, which has been prepared "for the use of the members of the Gold and Silver Commission," and which, though circulated privately and not published, has been kindly sent to the Library of the Society, Sir Thomas Farrer discusses a question of great complexity and importance. Its very difficulty and complexity indeed have deterred many of those who have taken part in recent controversies on currency matters from attempting to grapple with it, and the conclusions at which Sir Thomas Farrer himself arrives are in a sense of a tentative and provisional rather than final and positive character (*cf.* p. v). The question, however, must be faced by all who wish to attain anything like a firm basis for monetary discussion; and in too many cases, Sir Thomas Farrer contends, bimetallists have been prone to shirk its real difficulties. They have been too ready to assume, he affirms, that the fall in wholesale prices established on the evidence of index numbers—despite of the possible uncertainties and the undoubted difficulties attaching to the correct construction and interpretation of those numbers—is "due to a deficiency in the supply of gold;" and they have rarely had the patience to answer the preliminary question:—what is the "real connection between gold and prices?" And yet the answer to this inquiry is fundamental; and, unless it be answered, one of the most vital questions at issue in the controversy, it is asserted, is really "begged." For there may be a "fall in prices," an "appreciation of gold," an "increase in the purchasing power of gold," and yet it may none the less be inaccurate and misleading to speak of "a scarcity of gold." The fall may be due, as Mr. William Fowler in his evidence before the Commission has contended, and Professor Laughlin and others have argued in articles and pamphlets (*cf.* pp. 3 and 4), to the "greater abundance of the articles sold" and not to a "deficiency in gold." Nor is this merely, it is maintained, a difference of verbal expression; for, according as one or the other of these two contending explanations is adopted, the resulting consequences become vitally different. In the one case, as Sir Thomas Farrer argues (p. 4), a deficiency in gold would imply "no gain to mankind generally," but would on the contrary occasion a "disturbance in fixed contracts which simply takes from one party, and gives to the other." But, in the event of the other contingency, the fall of prices would mean that "mankind" were "generally" better off unless there had been "over-production," and that, whether there had, or had not, been this over-production, there would in any case be "no such disturbance of fixed contracts." The connection of the fall of prices with this second cause may be made to rest on two main lines of evidence, which may perhaps be roughly distinguished as affirmative and negative. The affirmative method proceeds by an examination, such as Mr. Wells has conducted, into the circumstances attending the production of those articles, the prices of which are shown to have fallen, and traces the fall, either to facts special and peculiar to the articles themselves, or to the general cause of cheapened production and transportation. The other method attacks the question at an earlier stage—the point where the gold comes into contact with prices. It investigates the signs of a scarcity of gold at this point, and declares that no such signs are now present. The first method then assigns another, and as it holds, a sufficient cause for the phenomenon; the second method endeavours to prove that there is no reliable indication of the presence of the supposed cause. It is therefore in the latter case that the connection between gold, credit, and prices becomes all-important.

This is the general view of the state of the controversy as described by Sir Thomas Farrer, and the question accordingly appears to him, as he points out (p. 5), to stand in need of fresh treatment, for the facts on which much of the matter contained in economic manuals is based have, he goes on to say, fundamentally changed within recent years. Gold is employed to an extent, remarkably small in comparison, in those wholesale dealings the prices of which have been cited as evidence of its appreciation and consequent deficiency. Its place has been taken by credit, and the transfer of securities is now used even for the settlement of international balances (p. 24). The examination, then, of the nature and effects of credit becomes of peculiar importance; and here Sir Thomas Farrer quotes (sec. iii) largely from Mr. Macleod's evidence and writings. We are bound to add, however, that he states the conclusions of that author with more caution and discrimination (*cf.* pp. 12, 16, 18, and 21) than they exhibit in their original form. Used in this way they serve to illustrate the development of credit, and its nature and effect on prices. As Jevons once maintained, the history of money begins with barter, and in modern times we seem to have returned to barter once more, though it be, as Sir Thomas Farrer shows (p. 17), barter of "a very refined description," effected "by the use and intervention of personal promises," of credit, that is, in its many and varied forms. One of these varieties may give place to another as the altering convenience of trade demands; and thus it appears that now "bills are diminishing in consequence of the shorter time for which cargoes are on the way, and of payments by telegraph" (pp. 12 and 18). But, although this change is sometimes described as an increase of "cash" transactions, the "cash" intended is merely another variety of "credit." In fact "the larger number, if not all," of the "forms of debt or credit, are, to all intents and purposes, 'currency'" (p. 12); and the failure of the Act of 1844 to realise the full "expectations of its promoters," and to "automatically restrict the currency of the country," was due (p. 13) to a narrow view of the various forms of currency. The attempt was made to limit only the particular variety of credit or currency known as bank-notes, and this limitation has been virtually stultified and set aside by the expedient adopted in practice of raising the "rate of discount." Credit, then, is a substitute for gold (p. 22) as a circulating medium, and a substitute of "infinitely greater expansibility." It is no longer necessary that gold should increase "in proportion to wealth and population" (p. 23); and it is not unlikely that the comparative steadiness of silver prices in India is due to the comparative absence of the "elastic credit-circulation" of the Western countries (p. 25). So far, in fact, "as prices depend on the circulating medium, it is to credit and not to gold that we must look as the great, or at any rate the immediate, regulator of prices," and "the important question will be, not whether that part of the circulating medium which consists of gold has diminished in quantity, but whether that much larger part which consists of credit has diminished" (p. 28).

Sir Thomas Farrer then goes on to argue that all these considerations do not imply that there is no connection between gold and prices; but they induce us to scrutinise very closely the argument which is too often advanced in some quarters, and carelessly assumes without examination, that a fall in prices must mean a deficiency in gold. They lead us to believe, he argues, that the connection between gold and prices depends on a prior connection between gold and credit, and that we cannot escape from an examination of the nature of that connection (sec. vi). That there is such a connection is clear. Gold continues to be the measure of value, though it may have ceased to a large extent to be the medium of exchange. All credit is expressed in terms of gold; and consequently "any alteration in the value of gold"—which depends on demand as well as on supply, and is *pro tanto* diminished by a substitution of credit for it as a medium of exchange—"affects proportionately the value of each item of the whole fabric of credit." Gold again "is only a measure of value by being a possible medium of exchange, and credit is legally convertible into gold." There must be then some reserves of gold, and these constitute of course a demand for it; but they are comparatively small and are daily becoming less. Credit on the other hand is continually expanding. There is what we may call an "organic development" of it, which increases with the advance of civilisation; and this has no "direct" dependence on the quantity of gold, but rather "supplements" it and tends "to arrest a fall in prices." There is also a "temporary expansion and contraction" of credit in what are known as good and bad times, and here a sudden increase or diminution of gold may exercise an effect; but this effect is comparatively little compared with the effects of other causes, such as "improvements in production and transport, scientific discoveries, war and peace," and is only exercised through the medium of the reserves. The reserves in fact are "the only known connection between the quantity of gold and prices," for even retail prices must ultimately depend, so far as the quantity of gold is concerned, on the reserves; and hence "the fact that in the period since the demonetisation of silver the reserves have been maintained at their former amount, and even on the whole at a higher amount than they were before, and that this has been done without raising the rate of discount"—the well known remedy for replenishing them—"higher or more often than before, affords a presumption that the fall in prices has not been due to a scarcity of gold." We have endeavoured thus to give a somewhat full abstract of the intricate argument developed in this pamphlet, on account partly of the difficulty of doing justice to it by any summary analysis. There is an obvious explanation of a good deal of his puzzle which Sir Thomas Farrer and authors like Mr. Fowler and Mr. Wells do not see, but it is interesting nevertheless to have the puzzle set out in this fashion. We have only to add in conclusion that Sir Thomas Farrer expresses a regret, which will be shared by many, that we have not at our command more complete statistics on such points as the amount of commercial credit in the shape of bills, of banking credit and assets, the changes in the rate of interest and discount, and in commercial prices "for a period of years for all important trading countries." "We should then," he adds (p. 52), "be able to speak with more certainty of what must now be in a great measure theory and opinion."

The Quarterly Journal of Economics, vol. ii, Nos. 1—3. Boston: George H. Ellis, 1888.

It is with somewhat mingled feelings—feelings of satisfaction and regret—that we learn from the cover of the January number of the Boston *Quarterly Journal of Economics*, that it has now a London publisher. It is indeed with satisfaction that we read the announcement, because we rejoice at anything which makes so excellent a journal as this more accessible to the English public. But this satisfaction is accompanied by a feeling of regret that, although the *Statistical Journal* has passed its jubilee, we have as yet no quarterly journal of *Economics* in England. There is, however, solid ground for hope that this regret may soon cease to be felt. For both from Professor Foxwell's letter—to which we shall presently have to call further attention—and from a note contained in the same number—we learn that it is likely that a journal somewhat similar to the Boston *Quarterly* may before long be established in this country. It is no empty compliment to say that such a journal could hardly have a better pattern to follow.

The first three numbers of this second volume fully bear out the great promise of the first. They contain a vigorous discussion of President Walker's theory of business profits. In this discussion Mr. Macvane in the first number, Professor Marshall and Mr. Webb in the second, and the propounder of the theory himself in the third, take part. The result of the discussion will, we think, be to leave the impression that President Walker has succeeded in showing that some of Mr. Macvane's criticisms are extravagant, that others arise from misunderstanding and misinterpretation, and that his attempted rehabilitation of the wage-fund theory is beside the mark; but that nevertheless Professor Marshall is correct in regarding the parallel set up between rent and profit as an "analogy" and only as an analogy "which if pressed too far, is likely to be misleading." As an analogy indeed it may throw light, as Mr. Webb endeavours to prove, on differences in interest as well as differences in profits and wages. Besides Mr. Macvane's article the October number contains a discriminating and instructive discussion by Mr. Stevens on "Futures in the Wheat Market," in which it is argued, with no little acuteness and sense, that some of the abuse levied against such transactions is misdirected and groundless. Professor Greven's paper on the monetary system of Holland, which was presented to the British Association last year, is reproduced in the same number; and an exhaustive summary is given in the appendix of the recent and important legislation concerning Workmen's Insurance in Germany.

The article, however, of greatest interest in the number for English readers is Professor Foxwell's letter on the Economic Movement in England. He traces the development of English economic thought from the period, some twenty-five or thirty years ago, when Political Economy seemed to have attained its zenith of popularity and authority. He shows how nevertheless all that was best in the literary, artistic, and spiritual world rose in revolt against the teaching of the then dominant school; how the irresistible logic of events summarily called it to account, and the extreme individualism on which it was based gave place before the revival of corporate feeling and the extension of the area of public control; and finally how economics itself revolted from authority and entered on one or rather three diverging and yet converging paths of development. Theory has gained in precision and therefore in real comprehensiveness. The historic sense has been awakened; and a moral and humanistic criticism has been directed to our economic life and institutions. These three directions of development, antagonistic as they may at first sight appear, are yet separated by no immovable barriers of distinction;

and this is shown by the impossibility of labelling such economists as Professor Walker in America, and Jevons in our country, as an exclusive adherent of one or other of the three schools. Mr. Foxwell then proceeds to pass in review the chief English contributors towards the recent development of economic thought; and he pays a just tribute to the wide-spread influence, conveyed both by personal intimacy and by his writings, of Professor Marshall, and to the unique position and character of Arnold Toynbee. He also examines the relation of economic thought to the various practical problems of the day; and here, as indeed was only to be expected, he reveals his well-known bimetallic inclinations. He concludes his able, exhaustive and interesting account by a sanguine, though not, we are glad to think, unreasonable estimate of the future prospects of the science. "There is," he declares, "a general awakening of interest in the study;" and nothing can "well be more promising than the present outlook."

In the second of the three numbers before us the article of the greatest interest for the readers of this *Journal* will doubtless be that written by President Walker on the approaching American census. He jealously defends the Tenth Census from the charges of expense and delay, and he advances many valuable suggestions for the conduct of the next census. He declares that much of the work of the last census—the tenth decennial census under the Constitution—was either definitive, or else such as to require only slight additions or corrections from time to time; and he wisely argues for the relegation of a great part of the work usually undertaken at the time of the census to the interval intervening between one census and another; and with this object he would retain the permanent services of an experienced staff. He acknowledges the inferiority of the United States in statistics of births and deaths, but he zealously contends that at a time when we find everywhere the proofs of a "rapidly-rising, fast-advancing" interest in statistical matters, the American nation must not be permitted from any considerations of politics or finance to fall back from its high place in the collection of statistical facts. "What the country wants is more information, not less." In the same number Mr. Arthur Hadley discusses, in an article of instructive interest at a time when the question of railway rates is before the English legislature, the workings of the Inter-State Commerce Law; and he shows that the American railway commission has succeeded because it has not attempted to substitute for a maxim understood and recognised by railway men—the maxim of adjusting rates to what the traffic will bear—some abstract, inapplicable, theory of cost of service. It has on the contrary made the other maxim the basis of its action; but it has insisted upon its impartial and equitable application. It has aimed at securing rates which the traffic will bear and not rates which the traffic will not bear. The third number of the journal contains an account of ground-rents in Philadelphia—"the city of homes," as it has been suggestively called—a history of the American tariff from 1830-60, from which we gather that its effects for good or for evil have been greatly exaggerated; and a severe criticism of some of Mr. Edward

Atkinson's statistical calculations. The three numbers continue the excellent and useful bibliography of recent economic publications which was a conspicuous feature in the first volume.

Essai sur la Théorie du Salaire. La Main d'Œuvre et son Prix. Par P. V. Beauregard. Paris: L. Larose et Forcel, 1887.

There are two points in connection with the subject of this work to which recent economic study has given striking prominence. That prominence has been due in the one case to statistical investigation of fact, and in the other to critical examination of theory. On the one hand statistics—arranged and interpreted by any fair and honest method that may be employed—have established, beyond the reach of effectual controversy, the fact that wages have made a great and permanent advance during the last half century. And on the other hand the old economic theory of wages—especially in the variety, or perversion, of its original form which is known by the name of the wages-fund—has been subjected to an unsparing criticism which has shown that while it possessed elements of truth, it did not give explicit recognition to the whole of the truth. These two separate lines of investigation have moreover their connecting links, as the volume before us illustrates. It is in a great measure because facts, which were once prominent, have ceased to be so, and facts which were once in the shade have been brought into the light, that the economic theory of wages has been revised and enlarged. It might indeed have been possible perhaps to reconcile the old theory—at least in its original form—with the steady advance of wages by which the last fifty years or thereabouts have been characterised; but the reconciliation would be strained and unnatural. And hence it is peculiarly fitting that M. Beauregard should preface his correction of theory by a careful investigation of fact.

The first part of his work, then, consists in a history of the price of labour; and he is careful to warn us (p. 3) that his consideration is confined to wages strictly so-called—wages, that is to say, paid by an "employer" to a "workman." He endeavours to trace the history of these wages from ancient to modern times, although he is fully aware (*cf.* p. 5) of the difficulties—the exceptional difficulties, as he terms them—of such researches. For the early periods the investigator has to be content with scattered and chance indications; and for the later, although the sources of his knowledge may be relatively abundant, and may in many cases possess the stamp of governmental authority, yet they may only too often be suspected of inaccuracy. In the first instance M. Beauregard turns his attention to the variations in money or nominal wages. From the scanty evidence to be gathered of such variations in the Greek and Roman period—when slavery, though dominant, did not entirely preclude hired labour—down through the ninth century, when the abbey-registers begin to afford some uncertain testimony, and the rate of wages commences to rise, and apparently—although the dearth of reliable material prevents the possibility of positive assertion—continues to do so during the three succeeding centuries, on to the thirteenth and fourteenth, when the first real glimmerings of daylight begin to appear in such statistical researches, and the increase of wages seems to have reached for a time its maximum, M. Beauregard pursues his investigations. During the greater part of the fifteenth century nominal wages appear to have been stationary, and towards the beginning of the sixteenth they underwent a decline. Towards the end of that c ıtury however they began to experience a sensible advance, but his advance was arrested during the first half of the eighteenth. The middle of that century marked, however, the turning-point, and from that time we have uninterrupted general progress. With the opening of the nineteenth century we are able to substitute for the general impression and vague—though perhaps not unreliable—tendencies of the earlier periods, something that approaches more nearly to exactitude and precision; and in agriculture, in the so-called extractive industries, in the metal, the building, the textile, and the petty manufactures, to each of which M. Beauregard devotes a separate section, an advance, varying indeed in degree in the different trades and occupations of the French, but undoubtedly progressive in general direction, is shown.

An advance, however, in nominal wages may conceivably be concurrent with a stationary or declining state of real wages; and consequently M. Beauregard proceeds in his second chapter to convert the conclusions of his first into their real equivalents. Here, as he remarks (p. 64), an element of abstraction is admissible; and the point to consider is less the degree of comfort which is, as a matter of actual fact, obtained by the working class than the degree that its pecuniary means would enable it to obtain. And here, in order to ascertain variations in prices and to be able to convert nominal into real wages, he adopts, for the centuries previous to our own, the familiar standard of the price of wheat. For on the one hand, as he argues, lists of prices of wheat exist which possess serious value; and on the other, wheat then occupied a preponderating space in the workman's budget. The results of this examination are contained in a table on page 79; and from this we gather that real wages were very low in Athens after the time of Alexander; that in Italy they were adequate during the age of Cicero, and stationary during that of Diocletian; that in France they were low before the ninth century and afterwards they were sufficient, until they became high during the apparent prosperity of the fourteenth, the fifteenth, and the first quarter of the sixteenth; that the end of the sixteenth witnessed a decline, to be followed by a rise at the beginning and another decline at the end of the seventeenth; and that in fact we may say that during the entire period embraced by the middle ages misery predominated as a whole over happiness. During the nineteenth century, however, the advance in real wages has been considerable, as statistics of consumption attest, corroborated as they are by the fact that the prices of necessary items of a workman's budget have not advanced as much as his earnings. A real improvement of 42 per cent. since 1853 and 60 per cent. since 1826 is regarded (p. 114) by M. Beauregard as proven by the examination, of which we have given a summary above, of the variation of nominal and real wages in France; and this conclusion is strengthened by evidence gathered from foreign countries, although detailed examination of that evidence is, in his opinion, rendered unnecessary by the researches —of which he avails himself largely—of M. Leroy Beaulieu and others. He reaches himself, however, the interesting conclusion (pp. 122, 143, and 146) that, owing to the low cost of life in France, the comparison of real wages is favourable to that country; and that, whilst agricultural wages have made a greater advance there than manufacturing, and the advance has been in the latter case less, and in the former case greater, in the first half of the century than in the second, in England on the other hand the advance in agriculture has lagged behind that in manufacturing industry, and both in England and the United States of America, the advance has been uniformly greater in the earlier half of the century.

The results thus obtained by historical investigation show that the theory of wages needs revision; and accordingly M. Beauregard devotes the second part of his work to an examination of that theory. Here he reaches by a method different in some respects, and interesting and valuable in character, conclusions generally agreeing with those obtained by recent economic thought and discussion; and it will not therefore be necessary to examine this part of his work at such length as we have thought well to devote to the first. But it is interesting to note the connection which he establishes between the first and the second parts; and his examination of the wage-fund theory is distinguished by a tone of fairness and moderation which is too often conspicuous by its absence from such criticisms. The historical investigation of the first part of his work has, he thinks (p. 149), shown that wages follow as a general rule the progress of capital and of the industrial arts. It has thus tended to indicate the strength and the weakness, the true and the false points, of the wage-fund theory. That theory rested in reality on a partial apprehension of the truth. It acknowledged that the theory of wages must be connected with the general theory of value; and thus its original point of departure was correct (*cf.* p. 160). It acknowledged again—and here it was also correct —that one of the objects or commodities exchanged in the wage-contract was labour; but it thought erroneously that the other was the capital destined to buy labour, and, by a still further degree of error, it sometimes summarily described this as capital and labour as population. It did not recognise that the term thus described as capital must really be set forth in more explicit language as "une somme déterminée à forfait sur le prix espéré du produit net futur." By expanding the term in this way we give elasticity to the "iron" limits of the wage-fund, and we divert our attention from the past to the future, from accumulated and predetermined capital to the price of the product of industry. Facts may at first sight appear to conceal this truth. The workman may—indeed he often, if not generally, does—obtain his wages before the goods are sold; and the employer may, and does, engage to pay him the stipulated wage, whether the expected price is realised or not. In fact the wage-contract seems to be triple rather than single (*cf.* p. 163). There is the dominating fact of the exchange of labour for a sum to be recovered from the expected product of the industry; but there is also a contract of insurance by which the employer undertakes the risks of the business, and the employed may be conceived to consent, in consideration of this, to receive a slightly lower wage; and there is lastly something of the nature of a loan by which the employer pays before he has sold, and may be conceived again to be recouped by something of the nature of interest in slightly-lowered wages. The wage-contract is then an example of the general theory of value; but it has its peculiar incidents, and we must never forget that the parties to the exchange are human beings actuated by human sympathies and human antipathies. In four lengthy chapters M. Beauregard develops this idea, and examines the mechanism by which the exchange is effected, the various influences producing varying rates of wages, the nature and causes of inequalities in different classes and trades, and the probable influence of civilisation on the future rate of wages.

He is, as we have said, in general accord with the latest results of economic research; and, if we might attempt a brief summary of these results, they would be of this nature: If we carry back our consideration of the older theory to the form in which it was presented by Ricardo, before the wage-fund doctrine had been stereotyped, we may say that, looked at chiefly from a statical point of view, and remembering that Ricardo employed the term profits in what would be now regarded as a loose and misleading sense, it would be easy to obtain from his theory an idea of what we may call the maximum limit to wages. That maximum would be found in the amount remaining when the average rate of profits had been secured—a rate really prescribed in Ricardo, as in later economists, by the productivity of industry. And in the same way it would be difficult to discover any other minimum, than that suggested in his idea of the cost of production of labour. But this maximum and this minimum alike which were identified by him—and correctly so far as normal wages were concerned—were conceived, it would seem, as too rigid and inelastic. He did not see—for he was possessed, and not unnaturally, by the overpowering influence of a law of diminishing returns—how the maximum limit might be extended with the progress of civilisation and the reaction of distribution on production, nor did he recognise the force by which the sympathy of public opinion and legal enactment have enabled the workmen to become strong instead of weak sellers in the labour market and to raise the maximum and minimum limits alike. In fact the chief change effected by modern research has been, not to deny the fundamental ideas contained in the Ricardian expressions, but to make explicit the real elasticity of these ideas, and thus to enable M. Beauregard and others to explain—as they could hardly otherwise have done—the advance of wages in the past and their possible, if not probable, further advance in the future.

* * * *

Vauban.—Dîme Royale. Par Georges Michel. Paris: Guillaumin et Cie.

This volume is the first of a series which is being published in

Paris under the title of *La Petite Bibliothèque des Économistes Français et Étrangers.* The object of the publication, which is under the direction of M. Chailley, is to popularise, by issuing in a convenient form and at a moderate price, the best works of the great economists both of France and other countries. These are to include the writings not merely of the orthodox, but even of socialists; and among the volumes which are announced to follow that before us, we notice one on Adam Smith by M. Courcelle-Seneuil, another on Hume by M. Léon Say, a third on Fourier by M. Ch. Gide, a fourth on Quesnay by M. Yves Guyot, another on Ricardo by M. Beauregard, another on Chevalier by M. P. Leroy-Beaulieu, and another on John Stuart Mill by M. Léon Roquet.

The series promises then to be comprehensive and valuable; and this promise is certainly redeemed by the volume before us. A portrait and an interesting biography of the celebrated military engineer are prefixed to his treatise. His humane feeling, which made it his chief ambition in his honourable and eventful military career to effect his aims with as little sacrifice of the lives, whether of his own soldiers or of the enemy, as was possible, and led him in his writings to evince on every page a feeling of the deepest sympathy for the sufferings of the common people; his untiring zeal in collecting and verifying the information required for his chief treatise, the pathetic and almost tragic close of his life, when his book was suppressed by the authorities, and the favour of his sovereign was forfeited, are narrated with brevity and point. The preface is followed by the treatise itself, which awakened no little interest at the time that it was issued, and was, Professor Ingram states in his *History of Political Economy*, translated and published in English as early as 1708. The book closes with a list of authorities upon the life of Vauban.

Vauban may perhaps be said to have been, together with Bois-Guilbert, who however criticised him on the ground that he considered the "produits bruts," and not the "produits nets," the precursor in some sense of the Physiocrats, and therefore of the great Scotch economist who was himself in some sense the disciple of the Physiocrats, Adam Smith; and it is interesting and curious to notice that two at least of Adam Smith's rules of taxation were adopted in their essence by Vauban. He wrote at a time after the Treaty of Ryswick, when the magnitude and the uneven distribution of taxation were crushing the common people of France beneath an intolerable load. It is certain, he declares, that the evil has been carried to excess; and that, unless a remedy be found, the people will fall into an abyss from which they can never be rescued. Nearly a tenth part of their number is already reduced to veritable beggary; and of the nine remaining five are unable to render help because they are themselves on the brink of the same misfortune, three more are involved in difficulties and in debt, and the ninth, which alone can be said to have reached any kind of prosperity, and includes the military, ecclesiastical, and civil dignitaries and officials, the nobility and the merchants, and traders, does not number more than one hundred thousand families, nor contain more than a quota of considerable independent prosperity. The causes of this lamentable position of affairs were not difficult to discover. They were the unequal weight of taxation. It mattered not whether this took the form of the "Taille," which had now become arbitrary in its incidence and amount, and bore no relation to the present value of the land on which it was levied; or whether it was raised in the form of "Aides" and "Douanes," which were excessive in degree and multitudinous in character, or whether lastly it was levied under the guise of "affaires extraordinaires." Whatever the mode of taxation, the result was an unequal weight on the most miserable part of the population, the common people. And yet the common people were really the source of the wealth and position of France. They supplied the soldiers and sailors, and a great number of the officers for her army and her fleet. They furnished the merchants and the petty judicial officials of the kingdom. They plied the arts and industries, they created the commerce and the manufacture of France; they were the labourers and the vinedressers, the shepherds, the sowers and the reapers of the country districts, and it was to relieve their misery that Vauban propounded his sovereign remedy. This was styled *la Dîme royale*, and consisted, to put it in brief, of a taxation of a tenth of all kinds of agricultural produce, and also a tenth of money incomes chargeable on manufactures and trades. It was in propounding this remedy that he in a sense anticipated two of those rules of taxation which are inseparably associated with the name of Adam Smith, and have since become an integral part of economics. One of his fundamental principles was this—that the subjects of the State should contribute towards its expenses in proportion to their income; and this principle has since appeared in Adam Smith's rule of equality. A second principle laid down by Vauban was this, that taxes should be certain in amount and easy of collection; and here we have an anticipation, undoubtedly of Adam Smith's rule of certainty, and perhaps also of his rule of economy. With this latter object Vauban insisted that taxation should as far as possible be single; but from this ideal he departed very far in the course of his work. His *Dîme royale* was to consist of four varieties. The first and by far the most important—the one to which the name of *Dîme royale* was given *par excellence*—displayed the tendencies which were afterwards to be so manifest in the physiocrats and their *impôt unique*. It was to be a tenth of all agricultural produce, or rather it was never to be more than a tenth, save on grave emergencies, when it might be a fifth. The second source of revenue was to be a tenth of the income of houses in towns, &c., and of mills, of wages and of salaries, &c.; and here Vauban's sympathy with the poor was manifested, for artisans were only to contribute a thirtieth and not a tenth of their wages. The third source of revenue was to be a tax on salt, and the fourth a fixed revenue, consisting of a great variety of small taxes. These proposals are developed with great care and minuteness, and Vauban is careful to show by statistical calculations the character, feasibility, and advantage of his plan. He is of course, like every reformer, inclined to exaggerate its beneficial effects, and he looks upon it as a veritable panacea. It may be easy to criticise him for this, or for his departure from his original idea of simplicity; but when we have done this we cannot refuse our assent to M. Michel's verdict (p. xxx) that the book marks an epoch in the history of the subject; that Vauban was in a very real sense a "precursor;" that he applied, for perhaps the first time, the experimental method to finance; that he employed and arranged statistics with care, and that he strenuously insisted, in season and perhaps out of season, on a principle of taxation which all will allow to be fundamental, however various be the methods by which it is applied—the principle of equity.

Archiv für Soziale Gesetzgebung und Statistik. Herausgegeben von Dr. Heinrich Braun. (Erster Jahrgang, Erstes Heft.) Tübingen: H. Laupp'schen. 1888.

This is the first part of a new publication which is being produced at Tübingen, under the editorship of Dr. Heinrich Braun. Four quarterly numbers are to be issued every year; and Dr. Braun has secured a London publisher in Messrs. Sampson Low, Marston, Searle and Rivington. The subjects to which the periodical is to be devoted are, as its title indicates, social legislation and statistics; and the social condition of all countries is embraced within the comprehensive design of the editor. Thus in this, the opening number, an introduction by the editor himself explaining the need, character, and aim of the journal, is followed by articles—in many cases of an elaborate, in most, if not all, of a thorough character—on such subjects as Workmen's Insurance in Germany, by Dr. Platter, Labour Statistics in England, by Dr. Baernreuther, the State of the Working Classes in Holland, by Dr. Pringsheim, and the Physical Condition of the Working class population in Central Russia, by Dr. Erismann. To these articles succeed three descriptions of recent legislation of a social character—in Switzerland, in Germany, and in the Netherlands; and these are in their turn followed by a section devoted to miscellaneous matter, while the number closes with two reviews of books. In the succeeding numbers we are promised articles—amongst others—on the necessity of poor relief in Austria, on the Belgian inquiry into the social condition of that country, and additional articles on the Influence of Occupation on Physical Condition among the Industrial Population of Central Russia, by Dr. Erismann, and on the Workmen's Insurance Laws in Germany, by Dr. Engel. The publication promises to take its place among periodicals of a statistical and economic character; and the increasing number and excellence of such publications is a welcome testimony to the growing interest in economic and statistical matters.

The One-Pound Note in the Rise and Progress of Banking in Scotland, and its Adaptability to England. By William Graham. 324 pp., 8vo. Edinburgh, 1886.

One of the results of the continued high price of gold is the proposal to revive in England the issue of 1*l.* notes, abolished more than sixty years ago. The object of the book before us is to demonstrate the great success attained in banking in Scotland, and the concurrent facilities offered to traders, by the use of the 1*l.* note, and also to show that this note was done away with on quite unjustifiable grounds in England. Mr. Graham points out (p. 243) the two essentials for the practical use of the small note, namely, that it should stand wear and tear and be very difficult to forge; and these essentials, more especially the latter, he maintains were never properly attended to by the English banks. While on this subject we may add he also maintains that the Bank of England 5*l.* note is not protected against the forger in the manner it should be (p. 294). The dread of forgery (p. 311) was one of the chief arguments used to get the 1*l.* note abolished; but as the author tells us, the notes were easily forged because the commonest precautions were not taken to prevent forgery. He also combats the opposition to the 1*l.* note by the statement (p. 292) that though in *number* the small note forgeries greatly exceeded the large, the latter considerably exceeded the former in *amount;* further that if in England forgery ceased with the abolition of small notes, it ceased also just as cash payments were resumed and peace was established, bringing greater prosperity and employment to the poorer classes; lastly (p. 290) he calls attention to the surprising fact that the Bank of England did not discover what evil things 1*l.* notes were until resumption of cash payments forced it to pay them in gold. Other objections raised against the small note were that it conduced to speculation, and that it was one of the chief causes of panics. With regard to its influence on speculation, Mr. Graham tells us (p. 275) that in England during the years 1777-97, when speculation was most rife, there was a total absence of small notes, from which he infers that 1*l.* notes are not more conducive to speculation, panic, and failure than any other form of paper credit. As to the question of panics, he gives evidence that in times of panic it is the holders of large notes and depositors (pp. 199, 286, and 311) who are the panic makers, and he adds (p. 297) that in England panics have been more frequent and regular since the abolition of the 1*l.* note than they ever were during its existence. Bearing on this panic question, so systematically attributed to the circulation of the 1*l.* note, we are told (pp. 281, 284, 288, and 289) that on certain occasions it was the small note which saved the country, and Mr. Graham also tells us (p. 282) that on one occasion a panic was only met by the Bank of England issuing 1*l.* notes. On the other hand he allows (p. 284) that over-issue of these notes by foolish and unprincipled banks did much harm, and that no paper money, however secured, has been known to stand the shock of war (p. 277). That the English people like the small note can hardly be doubted (p. 260). In England in 1817 out of a total circulation of 27 million pounds sterling, 28·5 per cent. was in 1*l.* notes; and for the three years ending 1819 it has been shown that while for large notes the difference between the highest and lowest amount in circulation was over 6 millions sterling, with the small notes the difference was only 866,000*l.* (p. 285). At the present day in Scotland the note circulation passed annually through the exchanges, that is between bank and bank, averages 170 million pounds sterling, of which 60 million is said to be in small notes (that is under 5*l.*); and the author calculates (p. 218) that bankers make a net profit of 81,448*l.* per annum on their 1*l.* note circulation. Mr. Graham points out (p. 300) that England loses annually in waste by wear and tear on the gold and in the cost of re-minting 60,749*l.*, quite apart from the loss of interest at 3 per cent. on 3,300,000*l.*, half of which could be saved. Mr. Graham is quite aware that there are legislative obstacles which lie in the way of a re-introduction of the 1*l.* note (p. 265), and attributes much of the objectionable legislation to the monopoly given to the Bank of England. He calls attention to the variety of banks artificially brought into existence by the legislature in its endeavours to preserve the Bank of England's monopoly (p. 312), gives the reasons for considering one bank of issue insufficient (p. 279), and claims free trade for banking (p. 272) quite as much as for other commercial undertakings. In speaking of the bank failures of last century, the writer states that as a rule the northern banker held a higher social position than his southern brother; hence the former was better educated, and the Scotch public consequently lost less than in the south. The author devotes a chapter to the material and manufacture of the note, and gives numerous illustrations of old notes, including a facsimile of Cruikshank's famous note which put an end to hanging for forgery. The work is supplied with a good index.

Synopsis of the Tariffs and Trade of the British Empire. Prepared and presented to the Commercial Sub-Committee of the Imperial Federation League by the Chairman, Sir Rawson W. Rawson, K.C.M.G., C.B. 83 pp., 8vo. [xiv tables.] London, 1888.

The object of this inquiry is to lay before the public the various methods by which customs revenue is raised in every portion of the Empire, so that those people interested in Imperial Federation or a commercial union of the whole of the British possessions may be enabled to judge of some of the obstacles they will have to overcome before their desires can be put into any practical form. The author makes no proposals, nor does he give any indication of his views for the establishment of a uniform tariff, but limits himself strictly to the collection of his data and their arrangement in readable form, and herein lies the value of the work. The facts relating to the tariffs and trade relate to the year 1885, that being the latest year for which full returns were available, but information relating to the rates of duty are given as close up as 1887. In order to show the operation of the tariffs of and in different colonies and settlements, we are furnished with tables in which the statistics of the population, total revenue and custom revenue are compared *inter se*, and thus obtain a capital bird's-eye view of the proportions the customs revenue bears to the total revenue, of the relative revenue per head of the population from total revenue and custom revenue, and the proportion borne by the duties on imports to the value of imports, &c. In the part relating to Trade—the interchange is given in values only—we are given the statistics for the United Kingdom for all the possessions separately, as well as those of their trade with foreign countries, and the percentage proportion of trade of every possession to its foreign trade, and its trade with the United Kingdom, &c. From the above it will be seen how thoroughly the work has been done, and the very large amount of information laid before the reader. All names, weights and measures are given in the British standards.

Estimate of the Value of Farm Products Sold. [By James Howard.] 2 + 6 pp., 4to. [Clapham Park, Bedfordshire, 1888].

This pamphlet is a synopsis founded on official returns, and gives the estimated average value for the three years 1885 to 1887 of the amount realised by the sale of the corn and green crops, hay, flax, hops, produce of orchards and market gardens, meat, hides, skin and wool, horses, milk, cheese, butter, poultry, pigeons, and eggs, produced in the United Kingdom. The total, which does not include consumption on the farm for seed, stables or food. the green peas sold, the produce sold from farmer to farmer, nor mules, asses, goats, timber, underwood, water cress, game (deer) rabbits, and honey, amounts to 207,033,567*l.*

Statistique de la Superficie et de la Population des Contrées de la Terre. Par Emile Levasseur. *Bulletin de l'Institut International de Statistique,* vol. i, pp. 1—113 and 165—242. [Two maps.] Rome, 1887.

The first attempt at an enumeration of the inhabitants of the earth was made by Riccioli in 1660, and he gave the figures for the population at 1,000 millions. Since his time there have been some nineteen similar estimates made, but the estimates of the last forty years, the latest of which now lies before us, have all been made with considerable scientific accuracy. As M. Levasseur points out, there are very considerable difficulties in getting an approximate estimate. For instance, in many countries the exact extent of area governed is not known to the governing officials, and this too in what are usually considered civilised countries. In some countries officials make use of the areas as calculated by the ordnance survey; in others those of the planimetrical survey are used; occasionally in one and the same country officials in different parts employ surveys based on the land register, while others use the ordnance survey. Then again the surveys are not all made on the same plan, so that in some cases lakes, bays, and estuaries are included in the surveyed area as inhabitable land, while in others it is not so included. The conclusion is that it is therefore no easy matter to get at an estimate of the average population per square mile to the habitable superficial area of the earth. With regard to Europe, excepting the Balkan Peninsula, M. Levasseur considers that the number of inhabitants is very fairly known. We notice that in his estimate of the Chinese population the author finds that the old large figure of over 400 millions appears to him to be more correct than any other. M. Levasseur's deductions from his study of the statistics of the population of Europe may be briefly summarised as follows: That the large river valleys on account of their fertility and favourable means of communication are the most populous; that the sea coasts which supply food and favour navigation are also well peopled when special local influence does not prevent it; that the coal beds exert a much greater influence in attracting population than river valleys or coast lines; that large towns have similar attractive force; that countries being populous according to their natural riches when their social state is much the same, the densest population is met with in the north-west and centre of Europe, and in Italy; that highlands and mountains are comparatively thinly populated, and that the northern portions of Europe, to the north of the parallel of St. Petersburg, and the steppes to the south-east, being unfavourable to cultivation ("culture"), are still more sparsely populated than highlands and mountains. As concerns the population of other portions of the earth, he points out that the figures indicate that islands and oases are thinly inhabited; that the absence of water and the extreme cold of the north are great obstacles to the occupation of the soil by human beings; that a state of savage life, as witnessed on the Amazons, in spite of the luxuriant vegetation, necessitates a large area for a handful of people. Finally, as regards the whole earth, that two large groups of population, which together with the European group constitute three-fourths of humanity, have settled themselves in China and India, on the rich banks of the large rivers, and that these three groups have probably been the original thresholds and certainly the most important groups of human civilization. M. Levasseur gives the estimate for the year 1886 of the total population of the earth at 1,483 million inhabitants, as against 1,433 millions calculated by Behm and Wagner for the year 1883.

VIII.—*Additions to the Library.*

Additions to the Library during the Quarter ended 30*th June*, 1888, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India, Colonial and other Possessions;* (c) *United Kingdom and its several Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

Donations.	By whom Presented.
(a) Foreign Countries.	
Argentine Republic—	
Report on the Public Debt, Banking Institutions, and Mint of the Argentine Republic, and on the National and Provincial Estimates and Taxation Laws. Book iv. Diagrams. La. 8vo. 1887	The Argentine Legation, London
Buenos Ayres—	
Boletin mensual de Estadistica Municipal. Año II, Enero-Marzo, 1888	Dr. E. R. Coni, Buenos Ayres
Bulletin mensuel de Démographie de la Ville de—. VIIe année, Janvier—Mars, 1888..........	Statistical Bureau of Buenos Ayres

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Austria and Hungary—	
Jahresberichte des k. und k. österreichisch-ungarischen Consulats-Behörden. XV Jahrgang, 1887. Hefte 1—12	The Ministry of Commerce
Oesterreichische Statistik. Band xv, Statistik der Rechtspflege. Heft 4. Die Verhältnisse der österreichischen Strafanstalten und der Gerichtsgefängnisse, 1884	The Central Statistical Commission
Statistische Monatschrift. März, 1888	
Wochenausweis der Sterbefälle in den grösseren österreichischen Städten und Gemeinden. Nos. 9—11. 1888	
Hungary—	
Magyarország Aruforgalma Ausztriaval es mas Orszagokkal. Fuzet 11, 12, 1887; Fuzet 1, 2, 1888. (Monthly Trade Returns)	The Royal Hungarian Statistical Bureau
Ungarns Waarenverkehr mit Oesterreich und anderen Ländern, für das Halbjahr 1887 vom Monate Juli bis ende Dezember	
Mittheilungen des kön. ung. Ministeriums für Ackerbau, Industrie und Handel. IV Jahrgang, 1888. Hefte 2—5	The Ministry of Agriculture, &c.
Statistisches Jahrbuch für Ungarn—	
1885. Heft 2, Sanitätswesen. Heft 8, Ungarns Rechtspflege und die Bewegung im Besitz und Lastenstande der Realitäten, 1885	The Royal Hungarian Statistical Bureau
1886. Heft 1, Politische Eintheilung und Bewegung der Bevölkerung, 1886. Heft 4, Bergbau- und Hüttenwesen, 1886. Heft 9, Cultus und Unterrichtswesen, 1886	
PRAGUE. Bulletin hebdomadaire de la Ville de—, et des Communes-faubourgs. (Current numbers)	The Statistical Bureau of Prague
Belgium—	
Annales des Travaux Publics de Belgique. 4e cahier, tome xlv, plates, 1888	The Administration of Mines
Annuaire Statistique de la Belgique. Tome xvii, année 1886	The Bureau of General Statistics, Ministry of the Interior
Industrie. Recensement de 1880. Tome i, Exposé Général. Tome ii, Statistique Générale des Industries Recensées. Tome iii, Statistique détaillée des Etablissements Industriels, de leur Personnel, de la Durée du Travail, du Taux des Salaires, et des Moteurs Mécaniques. 3 vols., la. 4to., 1887	
L'Industrie en Belgique. Exposé d'après le Recensement de 1880 de l'État des principales Industries. 4to. 1887	M. E. Nicolai, Brussels
Statistique Médicale de l'Armée Belge. Année 1886. Diagram. La. 8vo	The Government of Belgium
Exposition Universelle d'Anvers, 1885. Rapports des Membres du Jury International des Récompenses. Tomes i, iv, et vi. 3 vols., 8vo. 1886-87	C. M. Kennedy, Esq., C.B., London
Bruxelles—	
Annuaire Démographique et Tableaux Statistiques des Causes de Décès. Année 1887. Diagrams	Dr. E. Janssens, Brussels
Bulletin hebdomadaire de Statistique Démographique et Médicale. (Current numbers)	

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
China—	
Imperial Maritime Customs—	
I. Statistical Series, No. 2. Customs Gazette, October—December, 1887 III. Miscellaneous Series No. 6. List of Chinese Lighthouses, &c., for 1888	Sir Robert Hart, K.C.M.G., Peking
China Branch of the Royal Asiatic Society. Journal. New Series. Vol. xxii. Nos. 1—4, 1887	The Society
Denmark—	
Statistique du Danemark, 4ᵉ Série, Lettre D. No. 10*b*. Importation et exportation, production d'eau-de-vie et de sucre de betteraves en 1886	The Statistical Bureau of Denmark
Nationalökonomisk Tidsskrift. Ny Række. Hefte 3, 1888	The Danish Political Economy Society
France—	
Ministère de l'Agriculture. Bulletin. VIIᵒ année, No. 1, Mars, 1888	The Ministry of Agriculture
Ministère des Finances. Bulletin de Statistique et de Législation comparée. 1888— (Selection from Contents). Mars. France—Fabriques de Sucre en 1886-87. Produits annuels de l'Octroi de Paris depuis 1801. Tunisie—Commerce de la France avec la Tunisie en 1887 Avril. France—Pensions Militaires. Italie—L'Impôt sur la Richesse mobilière. Russie—Les Recettes de l'Exercice 1887 Mai. France—Recettes et Dépenses comparées, 1875-86. Statistique des Revenus en Prusse, en Saxe et en Angleterre. Russie—Commerce Exterieur en 1887	The Ministry of Finance
Ministère des Travaux Publics. Bulletin. Statistique et Legislation comparée. Janvier—Mars, 1888 Nivellement Général de la France. Lignes de Base du Réseau Bourdaloué. Rectifications à faire au recueil publié en 1864. Seconde edition. 8vo. 1888	The Ministry of Public Works
Reims—	
Bulletin Mensuel du Bureau Municipal d'Hygiène. Fevrier—Avril, 1888 Rapport Annuel du Bureau d'Hygiène et de Statistique. Vᵉ année, 1886. Diagrams, 8vo.	The Bureau of Hygiène
L'Economiste Français. (Current weekly numbers)	The Editor
Revue des Banques. Recueil mensuel des Institutions de Credit et de Prevoyance. Tome vii, fasc. 5 et 6, 1888. 8vo.	M. E. Fournier de Flaix, Paris
Revue Bibliographique Universelle—	
Partie Littéraire. Mars—Mai, 1888 „ Technique. Mars—Mai, 1888	The Editor
Revue Géographique Internationale. Nos. 146—149, 1887-88. (Contains "Le Recensement de 1887 de Chili.") Maps and plates	„

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
France—*Contd.*	
Annales de l'École Libre des Sciences Politiques. III^e année, No. 2, 1888. (Selection from contents.) La Conversion de la Dette 3 °/o en Angleterre: *A. Arnauné*	The Institution
Journal de la Société de Statistique de Paris. 1888— Avril. Le Prix Montyon de Statistique. Le Problème monétaire: *E. F. de Flaix.* Les Chemins de fer du Globe: *M. Hoffmann* Mai. F. x. de Neumann-Spallart. Le nombre des enfants par famille à Paris: *Dr. J. Bertillon.* Le Problème Monétaire (*suite et fin*): *E. F. de Flaix.* Statistique agricole de l'Allemagne: *A. Raffalovich* Juin. Leone Levi, article nécrologique: *A. de Foville.* Les Valeurs mobilières en France: *A. Neymarck.* *Variétés*—Les Finances Russes. Commerce de la Grèce. Grèves de patrons aux États-Unis. Richesses forestières de l'Europe	The Society
Revue d'Economie Politique. *II^e année*, 1888— No. 2. A propos d'un livre sur le Socialisme: *Dr. Schwiedland.* Méthode en Economie Politique: *A. Achard.* Droit de Propriété dans la Société franque et en Germanie (*suite*): *G. Platon.* La Taxe du Pain et les Boulangers de la ville de Caen en 1776: *E. Villey* No. 3. Le Droit de la Nation et le Droit de l'Étranger: *C. Turgeon.* Jean Meslier, un Précurseur oublié du Socialisme contemporain: *Dr. Gruenberg.* De l'aggravation des Impôts et des Moyens de l'enrayer: *L. Wuarin*	The Editor
Germany—	
Monatshefte zur Statistik des Deutschen Reichs. Februar—April, 1888	The Imperial Statistical Bureau
Prussia—	
Preussische Statistik. Band xciv. Bewegung der Bevölkerung, mit Einschluss der Wanderungen im preussischen Staate, 1886 Zeitschrift des K. Preussischen Statistischen Bureaus. Jahrgang 1887. Heft 3 und 4. Maps	The Royal Statistical Bureau of Prussia
SAXONY. Zeitschrift des K. Sächsischen Statistischen Bureaus. XXXIII Jahrgang, 1887. Heft 1 und 2	The Royal Statistical Bureau of Saxony
Berlin—	
Tabellen über die Bewegung der Bevölkerung der Stadt Berlin im Jahre 1886. 4to. Veröffentlichungen des Statistischen Amts der Stadt Berlin. Eheschliessungen, Geburten, Sterbefälle, und Witterung. (Current numbers)	The Statistical Bureau of Berlin
FRANKFORT. Handelskammer zu Frankfurt am Main. Jahres-Bericht für 1887. 8vo.	The Chamber of Commerce
Archiv für Soziale Gesetzgebung und Statistik. Erster Jahrgang. Heft 1. 8vo., diagrams, 1888	The Editor

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Greece—	
Bulletin mensuel du Commerce de la Grèce avec les Pays Étrangers. Janvier et Fevrier, 1888	The Statistical Bureau of Greece
Commerce de la Grèce avec les Pays Étrangers pendant 1887. 4to.	
Guatemala. Informe de la Direccion General de Estadistica, 1887. 8vo.	The Statistical Bureau of Guatemala
Italy—	
Annali di Agricoltura. Serie 2A. Nos. 13, 16, 26, 28, 31—98, 101, 102—105, 108, 109, 112. Plates, 8vo., 1879-86	The Director-General of the Statistics of Italy
Annali di Agricoltura, 1888—	
No. 136. La Proprietà del Sottosuolo	The Director-General of Agriculture
„ 140. La Razza Bovina Macchiata Rossa del Cantone di Berna	
„ 142. Atti della Commissione Consultiva per la Fillossera	
„ 144. Consiglio di Agricoltura, Sessione 1887	
„ 146. Atti del Concorso Internazionale di Caseificio	
„ 147. Zootecnia. Provvedimenti a vantaggio della produzione equina, 1887-88	
„ 148. Concorsi Internazionali di Macchine agrarie	
Annali di Statistica—	
Statistica Industriale. Fasc. 8—10. Maps, 1887	The Director-General of the Statistics of Italy
Statistica dei Pensionati Civili e Militari dello Stato, 1882-85. Diagram	
Bollettino di Legislazione e Statistica Doganale e Commerciale. Anno V. Febbraio—Maggio, 1888	
Bollettino mensile delle situazioni dei Conti, degli Istituti d'Emissione. Anno xix, Nos. 1—4, 1888	
Bollettino del Ministero degli Affari Esteri. Parte Prima. Vol. i. Fasc. 3—4, 1888	
Bollettino di Notizie sul Credito e la Previdenza. Anno vi, Nos. 4—6, 1888	
Bollettino Settimanale dei Prezzi di alcuni dei principali Prodotti Agraria e del Pane. (Current numbers)	
Bollettino. Casse di Risparmio. 2° Semestre 1886, 1° Semestre 1887. 8vo.	
Appendice al Bollettino Semestrale del Credito e del Risparmio. Operazioni di Credito e di risparmio dei Monti di Pietà, &c., 1886	
Bollettino Sanitario (Direzione della Sanita Pubblica). Marzo, Aprile, 1888. 4to.	
Popolazione. Movimento dello Stato Civile. Anno xxv, 1886	
Statistica del Commercio Speciale di Importazione e di Esportazione. Gennaio—Aprile, 1888	
L'Economista. (Current weekly numbers.) Florence	The Editor

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Italy—*Contd.*	
Giornale degli Economisti. Anno iii. Fasc. 2 e 3, 1888. (Contents)—Il nuovo progetto di legge sulla emigrazione: C. *Rosmini.* Dei commerci e delle industrie dell' Africa orientale: *Conte L. Pennazzi.* Il problema agrario in Italia: *A. Mortara.* Il fondamento economico-sociale nelle dottrine finanziarie: *G. Alessio.* Il progetto bancario: *L. Sbrojavacca.* Delle crisi economiche: *G. Della Bona.* Esposizione delle provincie dell' Emilia nel 1888: *P. Mariotti*	The Editor
Japan—	
Résumé Statistique de l'Empire du Japon. No. 2 Maps and diagrams. La 8vo. 1888	The General Statistical Bureau of Japan
Journal of the Statistical Society of Tokyo. Nos. 73—76, 1887. Portrait. (In Japanese)	The Society
Mexico—	
Informes y Documentos relativos á Comercio Interior y Exterior, Agricultura, Mineria é Industrias. Nos. 25—30, Julio—Diciembre, 1887. 8vo.	The Legation of Mexico, London
Noticias de las Acuñaciones é Introducciones de Metales Preciosos en el año fiscal 1886-87. Fol.	
Noticia de la Exportación de Mercancias en el año fiscal 1885-86. Fol	
Netherlands—	
Bijdragen tot de Algemeene statistiek van Nederland. Jaargang 1878. Aflevering 4. (In 2 vols.) 8vo.	M. G. M. Boissevain, Amsterdam
Statistiek der Geboorten en der Sterfte, naar den Leeftijd ende oorzaken van den dood in Nederland. October—March, 1887-88	The Department of the Interior
Bijdragen van het Statistisch Instituut. No. 1, 1888	The Institute
Russia—	
Annales Statistiques de l'Empire de Russie. Série III. Vols. xx, xxi, et xxiii. Mouvement de la Population dans la Russie d'Europe en 1881-83. 8vo	The Central Statistical Committee
Statistique de l'Empire de Russie. I. Annuaire Statistique de la Russie, 1884-85, avec Supplément. Maps, 8vo.	
Commerce Extérieur par la frontière d'Europe et recettes douanières de l'Empire en 1887. (In Russian)	The Statistical Bureau, Department of Customs
Journal of the Ministry of Finance. (Current weekly numbers.) (In Russian). 1888	M. A. Vessélovsky, St. Petersburg
Statistique des cours du change et des effets publics aux Bourses de Russie en 1887. 8vo	The Ministry of Finance
Spain—	
Memorias Comerciales y Suplemento, 1888—	
Sheet 5. Amberes, Riohacha, Genova, Savona, Spezia, Carrara y Marsella	The Board of Customs

Donations—Contd.

Donations.	By whom Presented.
(ii) **Foreign Countries**—*Contd.*	
Spain—*Contd.*	
Memorias Comerciales y Suplemento, 1888—*Contd.*	
Sheet 6. Marsella, Lisboa, Cairo, y Yokohama	The Board of Customs
„ 7. Yokohama, Gante, Santa Elena, Cardiff, Copenhague, y Tetuan..................................	
„ 9. Amberes, Ginebra, Filadelfia, Mogador, Kustendgie, Wisby, y Stettin	
„ 10. Stettin, Mesina, Rotterdam	
Tablas de Valores para la Estadistica Comercial y el Arancel de Aduanas para los años de 1886 y 1887....	
Boletin de la Sociedad Geográfica de Madrid. Tomo xxiii, Nos. 3—6. Tomo xxiv, Nos. 1—3, 1887-88....	The Society
Sweden and Norway—	
NORWAY—	
Norges Officielle Statistik. 4to.—	
B. No. 1. Kriminalstatistiske Tabeller, 1860, 1861, 1862, 1864, 1865, 1867, 1868	The Central Statistical Bureau
„ 2. Skiftevæsenet, 1866, 1867	
C. No. 2. Femaarsberetninger om Rigets og Amternes okonomiske Tilstand, 1856-60, 1871-75	
„ 3. Handel og Skibsfart, 1860, 1861, 1862, 1863, 1865, 1866	
„ 3a. Konsulatberetning, 1871, 1872, 1874	
„ 4. Sundhedstilstanden og Medicinal forholdene, 1859, 1860, 1861, 1862, 1863, 1864, 1866	
„ 5. De Spedalske i Norge, 1860, 1861, 1862, 1864, 1866, 1867, 1868............	
„ 6. Beretning om den Hóiere Landbrugsskole i Aas, 1864-65, 1865-66, 1866-67, 1867-68, 1868-69, 1869-70	
„ 8. Offentlige Jernbaner, 1868, 1877, 1878 (1ste Halvaar), 1878-79	
D. No. 1. Indtægter og Udgifter, 1860, 1861, 1862, 1864, 1865, 1867	
„ 2. Norges Sparebanker, 1870-72	
F. No. 1. Statstelegraf, 1861, 1862, 1863, 1864, 1865, 1866, 1868	
„ 2. Brevpost, 1866..	
Norges Officielle Statistik, Tredie Række 8vo.—	
No. 41. Uddrag af Aarsberetninger fra de forenede Rigers Konsuler, 1886. Hefte 1—5. (Consular Reports)	
„ 44. Rekruteringsstatistik for den norske Armee, 1886. (Recruiting)....................	
„ 45. Tabeller vedkommende Norges Sparebanker, 1886. (Savings Banks)	
„ 46. Den norske Statstelegrafs Statistik, 1886. (Telegraphs)	
„ 47. Tabeller vedkommende Norges Postvœsen, 1886. (Postal)	
„ 48. Oversigt over Sindssygeasylernes Virksomhed, 1886. (Lunacy)	

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Sweden and Norway—*Contd.*	
NORWAY—*Contd.*	
Norges Officielle Statistik. Tredie Række—Contd.	
No. 49. Tabeller vedkommende Norges Fiskerier, 1886 samt Beretninger angaaende deres Drift m. V. (Sea Fisheries)........	The Central Statistical Bureau
„ 50. Tabeller vedkommende Norges indenrigske Skibsfart, 1885. (Coasting)........	
„ 51. Beretning om Sundhetstilstanden og Medicinalforholdene i Norge, 1885. (Sanitary condition)	
„ 52. Tabeller vedkommende Folkemængdens Bevægelse, 1881-85. V. Tabeller for Aaret 1885. (Movement of Population)	
„ 53. Resultaterne af de kommunale Folketællinger i Norges Byer den 31st Dec., 1885. (Censuses of towns)	
„ 54. Statistiske Oplysninger vedkommende Norges Jordbrug og Fædrift, 1876-85. (Agriculture and Cattle rearing)............	
„ 55. De offentlige Jernbaner. Beretning om de norske Jernbaners Drift i Terminen 1886-87. (Public Railways)	
„ 56. Beretning om Rigets Distriktsfængsler for Aarene 1885-86. (Prisons)	
„ 57. Tabeller vedkommende Skiftevæsenet i Norge, 1885. (Bankruptcies)................	
„ 58. Beretning om Skolevæsenets Tilstand, 1883. (Education)	
Meddelelser fra det statistiske Centralbureau. Femte Bind, 1887. (Journal of the Central Statistical Bureau, vol. v)	
Statistisk Aarbog for Kongeriget Norge. 7ᵉ Aargang, 1887. (Statistical Year Book)............	
SWEDEN—	
Bidrag till Sveriges Officiela Statistik—	
A. Befolkningsstatistik, 1886. (Movement of Population)	”
B. Rättsväsendet, 1886. (Judicial Statistics)	
C. Bergshandteringen, 1886. (Mineral Statistics)	
D. Fabriker och Manufacturer, 1886. (Factories)	
E. Inrikes Sjöfart och Handel, 1886. (Inland and Coasting Trade)	
F. Utrikes Handel och Sjöfart, 1886. (Trade and Shipping)	
G. Fångvården, 1886. (Prisons)	
K. Helso-och Sjukvården, 1886. (Insanity)	
L. Statens Jernvägstrafik, 1886-87. (Railways)	
P. Undervisningsväsendet, 1880-83. (Education)	
Q. Skogsväsendet, 1886. (Forests.) Map...........	
R. Valstatistik, 1885. (Elections)	
S. Allmänna Arbeten, 1886. (Public Works)	
Switzerland—	
Rapport du Bureau Fédéral des Assurances sur les Entreprises privées d'Assurances en Suisse en 1886	The Federal Assurance Bureau

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Switzerland—*Contd.*	
Statistique du Commerce de la Suisse avec l'Étranger en 1885 et 1886. 2 vols. Map, la. fol.	The Federal Department of Customs
Statistique de la Suisse. 71^{e} Livraison. Examen Pédagogique des Recrues en automne, 1887. 4to., map Journal de Statistique Suisse, 1888. 1 Quartal-Heft	The Federal Statistical Bureau
United States—	
Department of Agriculture. Monthly Reports on the Condition of Crops, &c. March—May, 1888	The Department
Annual Report of the Comptroller of the Currency to the first Session of the fiftieth Congress. 1st December, 1887. 2 vols.	The Comptroller of the Currency
Consular Reports. Nos. 88, January; 89, February; 90 (Budgets and Budget Legislation in Foreign Countries), March, 1888	The Department of State
Annual Report and Statements of the Chief of the Bureau of Statistics on Commerce and Navigation for the year ending 30th June, 1887. Part 1. Foreign Commerce, Immigration and Tonnage. Quarterly Report of the Chief of the Bureau of Statistics relative to Imports, Exports, Immigration, and Navigation for the three months ending 31st December, 1887. [No. 2, 1887-88] Summary Statement of Imports and Exports. Nos. 7—10, 1887-88	The Bureau of Statistics; Treasury Department
Bureau of Education. Circular of Information, No. 3, 1887. Proceedings of the National Education Association at its Meeting in 1887. Plates. 8vo.	The Bureau of Education
Technical Education in Europe. First part. Industrial Education in France. Plates. 1888.	The Department of State
Report from the Secretary of the Treasury on the state of the Finances, December, 1845.	W. C. Ford, Esq., Washington
Annual Report of the Secretary of the Treasury on the State of the Finances for 1887. Diagram.	The Secretary of the Treasury
CONNECTICUT. *State Board of Health*—	
Monthly Bulletin for March, 1888 Circular No. 27 on Small Pox: Restriction and Prevention	The Board of Health
Massachusetts—	
Annual Reports of the Board of Commissioners of Savings Banks; including Abstracts of Reports from Savings Institutions, 1877 and 1878. 2 vols.	W. C. Ford, Esq.
Nineteenth Annual Report of the State Board of Health (contains—"the Heating and Ventilation of Schoolhouses by Jacketed Stoves"). Diagrams and plates, 8vo. 1888.	The Board of Health
New York State—	
Annual Report of the Commissioners of Emigration for 1877-81, and 1883-86. 9 parts. 8vo. Annual Report of the Comptroller on Insurance Companies. 8vo. 1859. Annual Reports of the Superintendent of the Insurance Department, 1st, 2nd (in 2 vols.), 4th, 5th, 6th, 7th, 11th (part 1), 13th (part 2), 14th (part 1), 17th (part 1), 20th and 22nd (part 1), Reports, 1860-81. 13 vols. 8vo.	Worthington C. Ford, Esq.

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
United States—*Contd.*	
Annual Report of the Superintendent of the Banking Department relative to Savings Banks. 8vo. 1879	Worthington C. Ford, Esq.
Special Report on Savings Banks. 8vo. 1868.........	
Rhode Island—	
Thirty-fourth Report upon the Births, Marriages, and Deaths for 1886. Diagrams. 8vo.	Dr. C. H. Fisher, State Registrar
Monthly Reports of Deaths in the City of Providence. Nos. 392—4, 1888..	Dr. E. M. Snow, Providence
WISCONSIN. Eleventh Report of the State Board of Health, 1887. 8vo.	The Board of Health
Bankers' Magazine. March—June, 1888. New York....	The Editor
Bradstreet's Journal. (Current weekly numbers.) 1888	"
Commercial and Financial Chronicle. (Current weekly numbers.) 1888	"
American Geographical Society. Bulletin. Supplement to vol. xix, and No. 1 of vol. xx. 1888	The Society
Franklin Institute. Journal. April—June, 1888	The Institute
Smithsonian Miscellaneous Collections. Vol. xxxi. 8vo. 1888	The Smithsonian Institution
Political Science Quarterly. Vol. iii, No. 1. March, 1888. The Bases of Taxation: *F. A. Walker.* The Tariff of 1828: *F. W. Taussig.* Control of Immigration. I: *R. M. Smith.* The Michigan Salt Association: *J. W. Jenks.* Nominations in New York City: *A. C. Bernheim*	The Editor
Quarterly Journal of Economics. Vol. ii, No. 3. April, 1888. A reply to Mr. Macvane, On the Source of Business Profits: *F. A. Walker.* Ground Rents in Philadelphia: *E. P. Allinson, B. Penrose.* The Tariff, 1830-60: *F. W. Taussig.* *Notes and Memoranda*—Government Monopoly *versus* Private Competition. Elements of Wages. The Proportion of Wages to other forms of Income. *Appendix*—Statistics of Iron and Cotton, 1830-60	"
Venezuela—	
Gaceta Oficial. (Current numbers.) 1888	Statistical Bureau
Statistical Annuary of the United States of Venezuela. Map, fol. 1887	N. G. Burch, Esq., London
International. Bulletin de l'Institut International de Statistique. Tome iii, 1ère Livraison. Année 1888. (Contents.) La popolazione d'Italia nei secoli xvi, xvii, e xviii: *G. Beloch.* La Statistique criminelle de l'Empire Allemand: *E. Würzburger.* Des éléments essentiels qui doivent figurer dans la statistique criminelle et des moyens de les rendre comparables: *E. Yvernès.* Il debito pubblico in Europa e negli Stati Uniti d' America: *G. Ricca-Salerno.* Il quarto congresso internazionale per la demografia tenuto in Vienna, 1887: *E. Raseri.* De la méthode des monographies de famille: *U. Guérin.* Synopsis of the Tariffs and Trade of the British Empire in 1885: *Sir R. W. Rawson*	The Director-General of the Statistics of Italy

Donations—Contd.

Donations.	By whom Presented.
(b) **India, Colonial, and other Possessions.**	
India, British—	
Trade and Navigation. Monthly Accounts. Nos. 10—12, 1887-88	The Department of Finance and Commerce, Calcutta
Trade by Land with Foreign Countries. Accounts. Nos. 8—10, 1887-88	
Bengal—	
Report on the Administration of Bengal, 1886-87. Maps, fol. 1888	The Lieutenant-Governor of Bengal
General Report on Public Instruction in Bengal for 1886-87. Maps, fol.	
Asiatic Society of Bengal—	
Journal. Vol. lvi, Part I, Nos. 2 and 3; Part II, Nos. 2 and 3. Plates, 8vo. 1887	The Society
Proceedings. Nov. and Dec., 1887, Jan., 1888	
Bombay Branch of the Royal Asiatic Society. Journal. Vol. xvii, No. 46, 1887	”
Canada, Dominion of—	
Statistical Abstract and Record for 1886. Second year of issue. 8vo.	J. G. Colmer, Esq., C.M.G., London
Budget Speech of Sir Charles Tupper, Minister of Finance, 27th April, 1888. Diagrams, 8vo.	
Civil Service List for 1887	J. G. Bourinot, Esq., LL.D., Ottawa
Estimates for the year 1888-89	
Report of the Board of Examiners for the Civil Service for 1887	
Report of the Commissioner of North West Mounted Police Force, 1887. Maps	
Report of the Department of Indian Affairs for 1887	
Report of the Department of the Interior for 1887	
Report of the Department of Marine for 1886-87	
Report of the Department of Militia and Defence, 1887	
Report of the Department of Public Printing and Stationery for 1886-87	
Report on Inspection of Weights, Measures, and Gas for 1887	
Report on the Lobster and Oyster Fisheries, 1887	
Report of the Minister of Agriculture for 1887	
Report of the Minister of Railways and Canals for the year 1886-87. Diagrams	
Report of the Postmaster-General for the year 1886-87	
Report, Returns, and Statistics of the Inland Revenue for the year 1886-87	
Report of Royal Commission on Railways, 1888	
Report of the Secretary of State for 1887	
Shareholders in the Chartered Bank of Canada as on the 31st December, 1887	
MANITOBA. Ninth Annual Report of the Winnipeg Board of Trade. 8vo. 1888	The Board
Canadian Parliamentary Companion and Annual Register for 1878 and 1881. Edited by C. H. Mackintosh. 12mo.	J. G. Bourinot, Esq., LL.D.
Insurance and Finance Chronicle. March—May, 1888. Portraits	The Editor

Donations.	By whom Presented.
(b) **India, Colonial, and other Possessions**—*Contd.*	
Cape of Good Hope. PORT ELIZABETH, Chamber of Commerce. Twenty-third Annual Report of the Committee for 1887. 8vo.	The Chamber of Commerce
Mauritius. The Mauritius Almanack and Colonial Register for 1888. 20th publication. 8vo.	D. P. Garrioch, Esq., the Compiler
New South Wales—	
The Wealth and Progress of New South Wales, 1886-87, by T. A. Coghlan, Government Statistician. 8vo. 1887	The Agent-General for New South Wales
SYDNEY. Report on the Vital Statistics of Sydney and Suburbs for 1887. 8vo.	The Government Statistician
Australian Economic Association. The Australian Economist, the Journal of the—, vol. i, No. 2, 1888	The Association
A Concise History of Australian Settlement and Progress, with full Reports of the Centennial Celebrations in 1888. (Reprinted from the "Sydney Morning Herald.") 212 pp., sm. 4to., map. 1888	The London Agents of the "Sydney Morning Herald"
New Zealand—	
Colonial Museum and Laboratory. 20th—22nd Annual Reports, with Lists of Donations and Deposits for 1884-85 to 1886-87	Sir James Hector, K.C.M.G., M.D., Wellington
Geological Explorations. 17th and 18th Reports of, during 1885 and 1886-87. Maps	
Index to Reports of the Geological Survey of New Zealand, from 1866 to 1885 inclusive	
Studies in Biology for New Zealand Students. No. 3, plates, 8vo. 1887	
Queensland. Supplement to the Government Gazette (containing Vital Statistics). Nos. 13, 34, 58, and 83. 1888	The Registrar-General of Queensland
South Australia. South Australian Institute. Annual Reports for 1860-61 to 1873-74. 8vo., 14 parts	Richard S. Benham, Esq., Adelaide
Trinidad. Report of the Registrar-General on Freeholds. 1888	The Registrar-General of Trinidad
Victoria—	
The Gold Fields of Victoria. Reports of the Mining Registrars for the quarter ended 31st December, 1887. Diagrams, &c.	The Mining Department
Victorian Year Book for 1886-87. (Fourteenth year of issue.) Map. 8vo.	H. H. Hayter, Esq., C.M.G., Government Statist

(c) **United Kingdom and its several Divisions.**

Donations.	By whom Presented.
United Kingdom—	
Army Veterinary Department. Annual Report and Statistical Returns for 1886 and 1887. Fol.	Dr. George Fleming, C.B.

Donations—Contd.

Donations.	By whom Presented.
(c) **United Kingdom and its Divisions**—*Contd.*	
United Kingdom—*Contd.*	
A Collection of Parliamentary Papers, consisting of 50 Reports of Select Committees, 66 Reports of Commissioners, 37 Miscellaneous Reports, and 294 Accounts, Papers, and Estimates	Mrs. Leone Levi
Mint. Annual Report of the Deputy Master of the Mint, 1887. 8vo. [C–5400.] 1888	The Hon. C. W. Fremantle, C.B.
Navigation and Shipping of the United Kingdom. Annual Statement for 1887. [C–5399.] 1888	The Board of Trade
Parliamentary Election, 1885. Return of Candidates' Expenses. No. 199. 1886	J. R. Carter, Esq.
Trade and Navigation. Monthly Returns. March—May, 1888	The Board of Trade
Board of Trade Journal, 1888— (Selection from Contents.)	
March. Losses from the Phylloxera in France. Trinidad Pitch Lake. Grain Trade of Odessa in 1887. The Paper Rouble and the rate of Exchange in Russia	
April. New Customs Tariff of Italy. Mercantile Marine Fund. Russian Railways	
May. Report on recent changes in Prices of Exports and Imports. Female Labour in the manufacture of ready-made clothing in Germany. Belgian Inquiry into condition of Industrial Classes	
England—	
Annual Summary of Births, Deaths, and causes of Death in London and other great Towns. 1887. 8vo. Diagrams	The Registrar-General of England
Births and Deaths in London, and in twenty-seven other great Towns. (Weekly Returns.) (Current numbers)	
Quarterly Return of Marriages to December, 1887. Births and Deaths to March, 1888. No. 157	
British Museum. Catalogue of Printed Books. 6 parts. 4to. 1888	The Trustees of the British Museum
Metropolitan Asylums Board. Annual Report of the Ambulance Committee for 1887. Fol.	The Board
BIRMINGHAM. Twenty-sixth Annual Report of the Free Libraries Committee for 1887. 8vo.	Thomas Beggs, Esq., London
LIVERPOOL. Free Public Library, Museum and Walker Art Gallery. Thirty-fifth Annual Report of the Committee. 8vo. 1888	The Committee
Ireland—	
Births and Deaths in Dublin, and in fifteen of the principal Urban Sanitary Districts. (Weekly Returns, with a Quarterly and Annual Summary.) (Current numbers)	The Registrar-General of Ireland
Quarterly Return of Marriages to December, 1887, Births and Deaths to March, 1888. No. 97	
DUBLIN. Metropolitan Police. Statistical Tables of the, for 1887. Fol.	The Commissioner of Police

Donations—Contd.

Donations.	By whom Presented.
(c) **United Kingdom and its Divisions**—*Contd.*	
Scotland—	
Births, Deaths, and Marriages in the eight principal Towns. (Weekly and Monthly Returns.) (Current numbers)	The Registrar-General of Scotland
Quarterly Return of Births, Deaths, and Marriages for the Quarter ending 31st March, 1888. No. 133	
Supplement to the Monthly and Quarterly Returns of Births, Deaths, and Marriages in 1887, also Vaccination Returns relative to Children born in 1886	
Thirty-first Detailed Annual Report of the Registrar-General of Births, Deaths, and Marriages in Scotland. [Abstracts of 1885.] 8vo. [C–5278.] 1888	
(d) **Authors, &c.**	
Beauregard (P. V.). Essai sur la Théorie du Salaire. La Main d'Œuvre et son Prix. 414 pp., 8vo. Paris, 1887	—
Bevan (G. Phillips). The Statistical Atlas of England, Scotland, and Ireland, containing forty-five maps with text. La. fol. 1882	Gilbert Purvis, Esq., London
Biollay (Léon). Études Economiques sur le xviii^{e} Siècle. Les Prix en 1790. viii + 508 pp., 8vo. Paris, 1886	—
Boccardo (Senatore G.). Tutela della Igiene e Sanita Pubblica. Discorso del—, pronunziato in Senato nella Tornata del 25 Aprile, 1888. 23 pp., 8vo. Roma, 1888	The Author
Bourinot (John G.). Local Government in Canada; an Historical Study. 72 pp., 8vo. Baltimore, 1887	”
Carter (Joseph R.). Stock Exchange Securities in 1877 and 1887 compared. 13 pp., sm. 4to. 1888	”
Cavalieri (Enea). La Questione dei Probi-Viri in Agricoltura. xlvii + 285 pp., 8vo. Roma, 1888	”
Chamberlayne (John). Magnæ Britanniæ Notitia: or the present State of Great Britain; with diverse Remarks upon the Ancient State thereof. 34th Edition of the South Part called England, and the 13th of the North Part called Scotland. Portrait, 8vo. 1741	Worthington C. Ford, Esq.
Coni (Emile R.). Progrès de l'Hygiène dans la République Argentine. xvi + 266 pp., plans and diagrams, 8vo. Paris, 1887	H. Ling Roth, Esq., Halifax
Cooke-Taylor (R. Whately). Introduction to a History of the Factory System. xviii + 441 pp., 8vo. 1886	The Author
Cowen (Charles). Witwatersrand, Johannesburg, and other Gold Fields. 25 pp., 8vo. Johannesburg, 1887	”
Davies (G. C.). Handbook to the Rivers and Broads of Norfolk and Suffolk. Ninth edition. 173 pp., map and plates, 8vo. 1887	W. Birt, Esq., London
Dupin (Baron Charles). Force Commerciale de la Grande Bretagne. Tome i. Voies Publiques. Tome ii. Côtes et Ports. Seconde edition. 4to. Paris, 1826. (With a volume of plates, obl. 4to.)	—

Donations—Contd.

Donations.	By whom Presented.
(d) **Authors, &c.**—*Contd.*	
[FINANCE.] The British Taxpayer and his Wrongs. Including an Analysis of a Typical Year's Imperial and Local Taxation, with remarks on the Budget Proposals of 26th March, 1888, and an Appendix. [Anon.] viii + 167 pp., 8vo. 1888	The Author
FOSTER (JOSEPH). Alumni Oxonienses: The Members of the University of Oxford, 1715-1886; their Parentage, Birthplace, and year of Birth, with a record of their Degrees. Being the Matriculation Register of the University, alphabetically arranged, revised, and annotated. Vol. i. Abbay—Dyson. xi + 401 pp., 8vo. 1888	„
GALARCE (A.). Buenos Aires. Sa Propriété urbaine et son commerce en 1886. 90 pp., la. 8vo. Buenos Aires, 1887	„
GONNER (E. C. K.). The University Economics. Political Economy. (An Elementary Text Book of the Economics of Commerce.) xv + 262 pp., 12mo. 1888	„
GRAHAM (WILLIAM). The One Pound Note in the rise and progress of Banking in Scotland, and its adaptability to England. ii + 324 pp, plates, 8vo. Edinburgh, 1886	H. Ling Roth, Esq.
HEWAT (ARCHIBALD). The Investments of Life Assurance Offices. 31 pp., 8vo. 1888	The Author
HILDRETH (R.). Banks, Banking, and Paper Currencies, in three parts. 1. History of Banking and Paper Money. 2. Argument for open competition in Banking. 3. Apology for one-dollar notes. 209 pp., 8vo. Boston, 1840	„
HOROBIN (J. C.). The Supply of Teachers. (In Slip) Diagram. 1888	„
HOWARD (JAMES). Estimate of the Value of Farm Products sold in the United Kingdom. 6 pp., 4to. 1888	„
JAEGER (DR. GUSTAV). Essays on Health-Culture. Translated and edited by Lewis R. S. Tomalin. Revised and enlarged edition. vii + 309 pp., 8vo. 1887	L. R. S. Tomalin, Esq., London
JOHNSON (GEORGE). Johnson's Graphic Statistics. viii + 80 pp. of diagrams, 8vo. Ottawa [1888]	The Author
LAWSON (ROBERT). The Milroy Lectures. On Epidemic Influences. On the Epidemiological Aspects of Yellow Fever. On the Epidemiological Aspects of Cholera. iv + 95 pp., maps and diagram, 8vo. 1888	„
LEVASSEUR (EMILE). Statistique de la Superficie et de la Population des contrées de la Terre. Maps and diagram. La 8vo. 1887	„
MAYR (DR. G.). Statistik der Todesursachen in Italien. 12 pp., 8vo. 1888	„
NECKER (M.). De l'Administration des Finances de la France. 3 vols., 8vo. 1784	—
NICHOLSON (F. A.). Manual of the Coimbatore District in the Presidency of Madras. xiii + 644 pp., map, 8vo. Madras, 1887	The Author
PEEK (FRANCIS). Social Wreckage, a Review of the Laws of England as they affect the Poor. Third edition. l + 256 pp., 8vo. 1888	The Howard Association

Donations—Contd.

Donations.	By whom Presented.
(d) **Authors, &c.—*Contd.***	
***Peek* (*Sir Henry*)—**	
Peerages. Steps in the Peerage and Baronetcies conferred by the several Governments, 1830-88 Statistics as to the Non-Alcoholic Drinks of the People of the United Kingdom (1840-87). 1888	The Author
***Petersen-Studnitz* (*Alexsis*)—**	
Bidrag til Belysning af Sporgsmaalet om Kobenhavns Tilbagegang. 8vo. [1887] Nationalökonomische Gesetzgebung. Das dänische Staatsbudget. 8vo. 1887	The Author
PINNOCK (ROBERT D.). History and Progress of Ovariotomy in the Australian Colonies. 15 pp., 8vo. Adelaide, 1888	"
RAE (GEORGE). The Country Banker: His Clients, Cares, and Work, from an Experience of Forty Years. Sixth edition. xi + 324 pp., 8vo. 1888	"
ROGERS (J. E. THOROLD). The Relations of Economic Science to Social and Political Action. [Address as President of the Bradford Economic and Statistical Society.] 47 pp., 12mo. 1888	The Society
SMEE (A. H.) and ACKLAND (T. G.). On the proper Method of Estimating the Risks incidental to Continental Warfare, and the rates of Extra Premium required to cover such risks. Joint Report to the Board of Directors of the Gresham Life Assurance Society. 48 pp., diagrams, 8vo. 1888	The Author
SPRAT (THO., late Bishop of Rochester). The History of the Royal Society of London, for the Improving of Natural Knowledge. Fourth edition. 12 + 438 pp. Frontispiece and plates, sm. 4to. 1734	W. A. Harris, Esq., Liverpool
STRACHAN (T. Y.). Report upon a proposed fund for relief . . . from Accidents and in Sickness and Old Age among the Employés in the Metalliferous Mines of Devon and Cornwall and District. 14 pp., 8vo. Newcastle-upon-Tyne, 1888	The Author
STREET'S List of Newspapers published in Great Britain and Ireland. 249 + xx pp., 8vo. 1888	Messrs. Street Brothers, London
TRACTS. A Miscellaneous Collection of Tracts relating to Temperance, Free Libraries, and the Opening of Museums, &c., on Sundays. 8vo. 1879-87	J. R. Carter, Esq., London
VAN DE LINDE (GERARD). Collieries. 72 pp., 8vo. 1888	The Author
VAUBAN. La Dime Royale. Par G. Michel. xxxvi + 208 pp. Portrait, 32mo. Paris [1887]	Messrs. Guillaumin and Co., Paris
WOOLSTON AND BEETON (MESSRS.). Statistical Chart of British Railways, 1887. Diagram	Messrs. Woolston and Beeton, London
(e) **Societies, &c. (British).***	
Arts, Society of—. Journal. Current numbers. 1888	The Society
Association of Chambers of Commerce. Report and Resolutions adopted at the 28th Annual Meeting. 8vo. 1888	The Association

---

* Foreign and Colonial Societies will be found under the various countries or possessions to which they belong.

Donations—Contd.

Donations.	By whom Presented.
(e) Societies, &c. (British)—*Contd.*	
British Iron Trade Association. Annual Statistical Report on the Home and Foreign Iron and Steel Industries in 1887 (with Appendices giving the Production of Coal and Iron in the World)	The Association
Brown Animal Sanatory Institution. Second edition. 116 pp., 8vo. 1888. [Letters, &c., on the Abolition of Vivisection]	The Institution
Chamber of Shipping of the United Kingdom. Report of Proceedings at the Eleventh Annual Meeting, 10th February, 1888. 8vo.	C. M. Kennedy, Esq., C.B.
Cobden Club Publications. 12mo. 1888—	
The A. B. C. of Free Trade, by E. N. Buxton. Revised edition	J. R. Carter, Esq.
The French Corn Laws, by Yves Guyot. Translated by J. W. Probyn	
Pleas for Protection Examined, by A. Mongredien. New and revised edition	
The Caribbean Confederation. Plan for the Union of the Fifteen British West Indian Colonies . . . with a true Explanation of the Haytian Mystery . . . by C. S. Salmon. Map	H. Ling Roth, Esq.
Co-operative Wholesale Society, Limited. Report and Balance Sheet for the 89th quarter ending March, 1886	The Society
East India Association. Journal. Vol. xx. Nos. 1 and 2. 8vo. 1888	The Association
Friendly Society of Iron Founders of England, Ireland, and Wales. 78th Annual Report for 1887. 8vo.	W. H. Hey, Esq., London
Imperial Federation League. Synopsis of the Tariffs and Trade of the British Empire, by Sir Rawson W. Rawson, K.C.M.G., C.B. 83 pp., 8vo. 1888	The Author
Institute of Actuaries. Journal. Vol. xxvii, part 2. 1888	The Institute
Institute of Bankers. Journal. June, 1888	"
Institute of Builders. Proceedings. Vol. i, part 3, 8vo. 1888	"
Institution of Civil Engineers. Minutes of Proceedings. Vols. xci and xcii, portrait and plates. 1888	The Institution
Institution of Mechanical Engineers. Proceedings. No. 1. Plates. 1888	"
London Chamber of Commerce. Journal. Nos. 74—76, 1888	The Chamber of Commerce
London Library. Catalogue of the—, with Preface, Laws and Regulations, and Appendix containing List of Members, Contents of Voluminous Collections, Alphabetical List of Tracts, and a Classified Index of Subjects. Fifth edition. 2 vols. La. 8vo. 1888	The Committee of Management
Manchester Statistical Society, 1888—	
The Modern Languages Problem in Modern Education, by L. C. Casartelli	The Society
Vital Statistics of Towns, by A. Ransome, M.D.	
Mitchell Library, Glasgow. Report for 1887. 8vo.	The Librarian
North of England Steam Shipowners' Association. Report for 1887. 8vo.	C. M. Kennedy, Esq., C.B.
Peace Society. Proved Practicability of International Arbitration. 4 pp., 8vo. 1888	The Society

Donations—Contd.

(e) Societies, &c. (British)—*Contd.*

Donations.	By whom Presented.
Public Health. The Journal of the Society of Medical Officers of Health. No. 1, May, 1888. 4to.	The Society
Royal Agricultural Society. Journal. Second series. Vol. xxiv, part 1. 1888	„
Royal Geographical Society. Proceedings. April and May, 1888	„
Royal Institution of Great Britain. Proceedings. Vol. xii, part 1. Map and plates. 8vo. 1887	The Institution
Royal Irish Academy—	
"Cunningham Memoirs." No. 4. 4to. 1887 Proceedings. Series ii, vol ii. Polite Literature and Antiquities, No. 8. Vol. iv. Science, No. 6. 8vo. Map. 1888 Transactions. Vol. xxix, parts 1 and 2. Plates, 4to. 1887 List of the Papers published in the Transactions, Cunningham Memoirs, and Irish Manuscript Series, between 1786 and 1886. 4to.	The Academy
Royal Medical and Chirurgical Society. Proceedings. October—March, 1887-88	The Society
Royal Society. Proceedings. Nos. 259—267. 1888	„
Royal Society of Literature. Reports for 1884, 1885, and 1887. 3 parts. 8vo.	C. H. E. Carmichael, Esq., London
Royal United Service Institution—	
Brief History of the Institution. Plates, 8vo. 1887 Index to the Lectures and Papers contained in Vols. xxi—xxx of the Journal. 1887 Journal. Vol. xxxi, No. 142; vol. xxxii, No. 143. Plates. 1888	The Institution
St. Bartholomew's Hospital. Statistical Tables of the Patients under treatment during 1886. 8vo.	The Hospital
Society for the Propagation of the Gospel in Foreign Parts. Report for the year 1886. 8vo.	The Society
Surveyors' Institution. Transactions. Vol. xx, parts 3—12, 1888	The Institution

(f) Periodicals, &c. (British).*

Donations.		By whom Presented.
The Economist. Vols. for September—December, 1843; January—June, 1844; January—December, 1845; January—December, 1846. 6 vols. Fol.		The Hon. Michael Solomon, C.M.G., Jamaica
Athenæum, The	Current numbers	The Editor
Bankers' Magazine (London), The	„	„
Building Societies and Land Companies' Gazette, The	„	„
Commercial World, The	„	„
Economist, The	„	„
Fireman, The	„	„
Indiarubber and Guttapercha Journal	„	„
Insurance Post, The	„	„
„ Record, The	„	„
„ and Finance Leader, The	„	„

---

* Foreign Periodicals will be found under the various countries in which they are issued.

Donations—Contd.

Donations.		By whom Presented.
(f) Periodicals, &c. (British)—*Contd.*		
Investors' Monthly Manual, The	Current numbers	The Editor
Iron and Coal Trades' Review, The	"	"
Machinery Market, The	"	"
Nature	"	"
Policy-Holder Journal, The	"	"
Review, The	"	"
Sanitary Record, The	"	"
Scientific News	"	"
Shipping World, The	"	"
Statist, The	"	"

Purchases.

Authors—

Hastings (E. J.). Statistical Atlas of Commercial Geography, 1887.
Horton (S. Dana). The Silver Pound, 1887.
Jevons (W. Stanley). Investigations in Currency and Finance, 1884.
Rogers (*J. E. Thorold*)—
  History of Agriculture and Prices in England, vols. iii—vi, (1401-1702).
  The First Nine Years of the Bank of England (1694-1703).

Parliamentary Papers—

Agricultural Returns of Great Britain for 1887. [C-5187.] 1887.
Banking in Ireland. Report on certain Statistics of— [C-4973.] 1887.
East India Financial Statement, 1887-88. (134.) 1887.
Fishery Board for Scotland. Report for 1886. [C-5097.] 1887.
Finance Accounts of the United Kingdom for 1886-87. (204.) 1887.
Immigration of Foreigners into United Kingdom. (112.) 1887.
Judicial Statistics of England for 1886. [C-5155.] 1887.
  " Ireland for 1886. [C-5177.] 1887.
  " Scotland for 1886. [C-5212.] 1887.
Local Taxation Returns of England and Wales for 1884-85 and 1885-86.
Merchant Shipping. Tables showing Progress of— (207.) 1887.
Marriages, Births, and Deaths in Ireland. 22nd Report of Registrar-General on— [C-4801.] 1886.
Mining Rents and Royalties. Reports on— [C-4998.] 1887.
National Debt for each year from 1857-58 to 1886-87. (238.) 1887.
Parliamentary Constituencies. (124.) 1887.
Post Office Savings Banks. (197.) 1887.
Railway Commissioners. 13th Annual Report of the— [C-5058.] 1887.
Reformatory and Industrial Schools of Great Britain. 13th Report of Inspector— [C-5102.] 1887.
Savings Banks. Return. (233.) 1887.
Sweating System at the East End of London. Report on the— (331.) 1887.
Science and Art Department. 34th Report of the— [C-5076.] 1887.
Trade Unions. Report on— [C-5104.] 1887.
Thirty-four Bound Volumes of Parliamentary Papers, chiefly Reports of Select Committees and of Commissioners and Miscellaneous Reports, 1835-52.

Vol. LI.] [Part III.

JOURNAL

OF THE ROYAL STATISTICAL SOCIETY,

SEPTEMBER, 1888.

REPORT *of the* COUNCIL *for the* FINANCIAL YEAR *ended* 31*st December*, 1887, *and for the* SESSIONAL YEAR *ending* 26*th June*, 1888, *presented at the* FIFTY-FOURTH ANNUAL GENERAL MEETING *of the* ROYAL STATISTICAL SOCIETY, *held at the Society's Rooms*, 9, *Adelphi Terrace, Strand, London, on the* 26*th of June*, 1888.

C. M. KENNEDY, ESQ., C.B., a Vice-President, *in the Chair.*

THE Circular convening the Meeting having been read, and the Minutes of the last Ordinary Meeting read and confirmed, the following Report of the Council was taken as read:—

Report of the Council.

The Council have the honour to submit their Fifty-Fourth Annual Report.

The roll of Fellows on the 31st December last compares as follows with the average of the previous ten years:—

Particulars.	1887.	Average for the Previous Ten Years.
Number of Fellows on 31st December	977	825
Life Members included in the above	160	132
Number lost by death, withdrawal, or default	59	52
New Fellows elected (and one resignation cancelled)	93	85

Since the 1st January last, 75 new Fellows have been elected, making the present number 1,033.

The financial condition of the Society continues to be satisfactory. The following table gives, for purposes of comparison, the different sources of ordinary income for the year 1887, together with the same particulars for the previous five years:—

Receipts per	1887.	1886.	1885.	1884.	1883.	1882.	Average for the Five Years previous to 1887.
	£	£	£	£	£	£	£
Dividends	73	73	73	88	102	94	86
Annual Subscriptions	1,621	1,583	1,462	1,447	1,361	1,291	1,429
Compositions	126	231	63	294	126	189	181
Journal sales	188	180	188	207	150	227	190
Advertisements in Journal	21	19	26	19	35	37	27
Miscellaneous refunds	—	—	—	84	4	—	—
	2,029	2,086	1,812	2,139	1,778	1,838	1,913
Legacy of Dr. Guy	—	—	250	—	—	—	—
Mr. Pochin's Prize for the Newmarch Memorial Essay	—	—	—	—	—	100	—
Sale of 1,000*l.* New 3 per Cent. Stock	—	—	—	1,007	—	—	—
	—	—	2,062	3,146	—	1,938	—

On the other hand, the expenditure has been as follows:—

Expenditure for	1887.	1886.	1885.	1884.	1883.	1882.	Average for the Five Years previous to 1887.
	£	£	£	£	£	£	£
Rent, rates, and taxes	237	227	310*	56	80	83	151
Fire, lights, and water, repairs, furniture, &c.	81	72	88	—	77	56	59
Salaries, wages, and pension	419	420	392	394	381	362	390
Advertising, postage & delivery of Journals, stationery, & sundry printing	209	256	241	248	222	191	232
Ordinary meeting Expenses	39	24	23	24	32	26	26
Journal	609	735	625	645	585	553	629
Library	87	32	27	38	49	60	41
Miscellaneous	64	76	50	65	61	54	61
	1,745	1,842	1,756	1,470	1,487	1,385	1,589
Catalogue and Index to Library	280	31	247	392	128	153	—
Newmarch Memorial Fund	—	—	—	—	—	21	—
Removing to 9, Adelphi Terrace	—	—	67	1,203	—	—	—
Mr. Pochin's Prize for the Newmarch Memorial Essay	—	—	100	—	—	—	—
Howard Medal Prize Essays	—	—	—	23	20	22	—
Jubilee Volume	—	233	—	—	—	—	—
Charter	110	—	—	—	—	—	—
	2,135	2,106	2,170	3,088	1,635	1,581	—

---

* Of this sum about 114*l.* belongs to the expenditure of 1884.

A comparison of the principal figures at intervals of ten years in the following table, will show the progress of the Society from an early date :—

Comparison of the Condition of the Society at Intervals of Ten Years, on 31*st December.*

Year.	Number of Fellows.	Ordinary		Amount Invested.	Liabilities.	Assets over Liabilities.	Year.
		Income.	Expenditure.				
		£	£	£	£	£	
1837	390	738	887	899	11	890	1837
'47	412	756	828	899	255	1,022	'47
'57	394	869	755	899	122	1,634	'57
'67	371	778	831	1,043	97	1,822	'67
'77	683	1,597	1,286	1,398	201	3,562	'77
'87	977	2,029	1,745	2,500	624	5,268	'87

The following table gives the particulars for each year of the last decade on 31st December :—

Year.	Number of Fellows.	Ordinary Income.	Expenditure.	Amount Invested.	Liabilities.	Assets over Liabilities.	Year.
		£	£	£	£	£	
1878	746	1,732	1,345	1,902	168	4,147	1878
'79 ...	783	1,698	1,427	2,283	238	4,433	'79
'80	808	1,902	1,517[†]	2,572	214	4,614	'80
'81	807	1,649	1,400	2,869	192	4,935	'81
'82	786	1,838	1,581[‡]	3,071	203	5,240	'82
'83	860	1,778	1,635[‡]	3,500	347	5,246	'83
'84	909	2,139	3,087[*][‡]	2,500	968	4,188	'84
'85	928	1,812	2,170[*][‡][§]	2,500	1,169	3,791	'85
'86	943	2,086	2,106[‡][‖]	2,500	741	5,163	'86
'87	977	2,029	2,135[‡][¶]	2,500	624	5,268	'87

[*] Affected by expenses incident to moving into new premises.

[†] Affected by expenses attending the alteration, &c., of the meeting room at King's College.

[‡] Affected by expenses attending the preparation of the new Catalogue and Index to the library.

[§] Includes 100*l.* given by Mr. H. D. Pochin for the Newmarch Memorial Prize Essay.

[‖] Includes balance of cost of Jubilee volume.

[¶] Affected by special outlay for the Charter.

The averages of the annual sales of the Society's *Journal* are as follows:—

	£
For the ten years 1841-50	56
„ '51-60	83
„ '61-70	97
„ '71-80	155
For the last seven years '81-87	184

The Society re-assembled in December, and the papers read and the members elected at each of the monthly meetings were as follows:—

SESSION 1887-88.

First Ordinary Meeting, Tuesday, 6th December, 1887,

HELD AT WILLIS'S ROOMS.

The President, THE RIGHT HON. G. J. GOSCHEN, M.P., Chancellor of the Exchequer, in the Chair.

The following were elected Fellows:—

Alfred Baldwin, J.P.
Francis Bolling.
Edward Bond.
Robert Capper.
R. Whately Cooke-Taylor.
H. de Ricci.
J. J. Fenton.
T. Freeman, junr.
George J. Gribble.
Thomas Hamilton, J.P.
Leonard F. Harrold.
Ralph Heap, junr.
John Hopkins.
Henry Barry Hyde.
John Walter Jones.
Angus Macmillan, M.D.
Maurice Makower.
Frank R. Malleson.
James S. Mann, M.A.
W. E. Mann.
David Marks.
W. Bayley Marshall.
James Martin.
Arthur Chisholm Moore.
George R. O'Galligan.
Richard M. Pankhurst, LL.D.
Archibald Parker.
William Percival.
Colonel A. Phelps.
Charles H. Phillips.
Leslie Charles Probyn.
Arthur Herbert Roberts.
Henry James Robinson.
Thomas Russell, C.M.G.
Alfred Louis Sacré.
David A. Shennan,
Major-General C. Sim.
Joseph Smith.
Arthur Henry Snell.
Robert Muter Stewart.
William Edward Thomson.
George Tunley.
C. E. Howard Vincent, M.P., C.B.
Thomas Wardle.
Frederick Whinney.
Rev. George Cecil White, M.A.
George Charles Williamson.
Coventry Archer Woodhouse.
A. W. Worthington, B.A.
William Ernest Wright.

The President delivered an Inaugural Address upon "The "Increase of Moderate Incomes."

A cordial vote of thanks to the President for his Address was moved by Sir R. W. Rawson, seconded by Mr. M. W. Collet, and supported by Sir James Caird.

Second Ordinary Meeting, Tuesday, 20th December, 1887.

Dr. T. GRAHAM BALFOUR, F.R.S., a Vice-President, in the Chair.

The following were elected Fellows:—

Joseph Howard Barnes.
Harry Pearson Brocklesby.
Edward Simpson Byrne.
Charles H. E. Carmichael.
Nathaniel Lewis Cohen.
Mark Wilks Collet.
Frederick William Frankland.
John Howard Gwyther.
Donald Carmichael Haldeman.
Edward W. Hamilton, C.B.
William A. Harris.
Somerset William D'Arcy Irvine.
Alexander Leitch.
Herman Le Roy-Lewis, B.A.
Andrew J. Macdonald.
Walter Charles G. Macpherson.
Leveson Edward Scarth, M.A.
Edward Seaton, M.D.
John Thomas.
George Wreford.

Sir Juland Danvers, K.C.S.I., read a Paper on "The Defects of "English Railway Statistics."

In the discussion that followed the undermentioned took part:—Mr. G. Baden-Powell, M.P., Mr. C. R. Haig, Mr. R. Price-Williams, Sir A. M. Rendel, Mr. E. H. Carbutt, Major-General E. C. S. Williams, C.S.I., Mr. H. Oakley, Mr. Edmund Kimber, and Mr. H. Tennant.

Third Ordinary Meeting, Tuesday, 17th January, 1888.

FREDERICK HENDRIKS, Esq., F.I.A., a Vice-President, in the Chair.

The following were elected Fellows:—

G. R. Benson.
Edward Hamer Carbutt.
Rev. S. Thorn Gwilliam, B.A.
James Howard.
James McCankie.
William Robert Molloy.
John Morris.
James Pollard.
Joshua Shillcock, B.A.
William Wade Wartnaby.
John T. Wills, B.A.

Mr. Benjamin Jones read a Paper on "Progress, Organisation, "and Aims of Working Class Co-operators."

The undermentioned took part in the discussion that followed:—Mr. E. Vansittart Neale, Mr. G. J. Holyoake, Rev. Isaac Doxsey, Professor H. S. Foxwell, Mr. S. Bourne, Mr. George Seton, Major P. G. Craigie, Mr. H. G. Rawson, and Mr. F. Hendriks (the Chairman).

Fourth Ordinary Meeting, Tuesday, 21st February, 1888.

FREDERICK HENDRIKS, Esq., F.I.A., a Vice-President, in the Chair.

The following were elected Fellows:—

Thomas Acheson Bellew.
George James Crosbie Dawson.
Reginald Embleton Emson.
Arthur Richard Farlow.
Henry Fisher, J.P.
Herbert Lloyd Reid.
Colonel the Hon. W. Le Poer Trench.
Henry Ward.
Henry Barlow Webb.
Alderman James Whitehead.
Thomas Rodriques Woolfe.
William Basil Worsfold, M.A.

Mr. Joseph G. Colmer read a Paper on "Some Canadian Railway and Commercial Statistics."

A discussion followed, in which the undermentioned took part: —Mr. W. Leigh Bernard, Sir G. Baden-Powell, M.P., Mr. F. Sharp Powell, M.P., Mr. James Mosse, Mr. T. H. Elliott, Mr. F. Hendriks (the Chairman), and Mr. S. Bourne.

Fifth Ordinary Meeting, Tuesday, 20th March, 1888.

Robert Giffen, Esq., LL.D., a Past-President, in the Chair.

The following were elected Fellows:—

A. H. Dyke Acland, M.A., M.P.
Richard William Binns, F.S.A.
George Bottomley.
W. W. Clapham.
Henry W. Elliott.
Sir William B. Forwood, J.P.
Thomas Ironmonger, J.P.
John Ridgway, J.P.
William Henry Verdin, J.P.
Rev. Harry Vian-Williams.

Mr. Arthur Ellis read a Paper on "The Quantitation of Stock Exchange Values."

In the discussion that ensued the following took part:—Mr. F. Hendriks, Mr. H. M. Paul, Mr. Rowland Hamilton, Mr. John Glover, Mr. F. F. Begg, Mr. T. H. Elliott, Sir Rawson W. Rawson, Mr. J. E. Matthews, and Mr. Robert Giffen (the Chairman).

Sixth Ordinary Meeting, Tuesday, 17th April, 1888.

Dr. T. Graham Balfour, F.R.S., a Vice-President, in the Chair.

The following were elected Fellows:—

Ebenezer J. Barton.
Arthur Knatchbull Connell.
Hon. N. De L'Aigle Grosvenor.
Alfred Hill, J.P.
Henry Oakley.
William Henry Perratt.
The Hon. Mr. Justice Pinhey, J.P.
Sir David Radcliffe, J.P.
Charles Scotter.

Mr. R. H. Inglis Palgrave, F.R.S., read a Paper on "Progressive Taxation as Levied in Switzerland—Cantons Basel-Stadt, de Vaud, and Uri."

The undermentioned took part in the discussion that followed: —Mr. F. Hendriks, Mr. F. B. Garnett, C.B., Mr. H. Vernet, Mr. T. H. Elliott, Mr. S. Bourne, Sir Rawson W. Rawson, Mr. F. Sharp Powell, M.P., and Mr. E. J. Hardcastle.

Seventh Ordinary Meeting, Tuesday, 15*th May,* 1888.

Dr. T. Graham Balfour, F.R.S., a Vice-President, in the Chair.

The following were elected Fellows:—

John W. Batten.
Henry F. Billinghurst.
Sir F. J. Bramwell, D.C.L., F.R.S.
William A. Byrom.
Ebenezer Carr.
Frederick H. Collison.
Jacob Earnshaw.
J. C. Eckersley, M.A., F.R.G.S.
Edmund Ernest Finckenstadt.
Joseph S. Green.
Robert Hammond.
John King.
Sir James Kitson, Bart., J.P.
W. F. Narraway.
George Rae.
Thomas William Read.
Thomas Rushton.
Thomas G. Shuttleworth.
Francis William Slade.
Walter J. Smith.
Theodore Cooke Taylor, J.P.
D. A. Thomas, M.P.
Frederic Walmsley.
John W. Williamson.

Mr. Charles Booth read a paper on "The Condition and Occupations of the People of East London and Hackney, 1887."

In the discussion that followed the undermentioned took part:—Mr. F. Scott, Mr. R. Giffen, Mr. S. Dana Horton, Sir Rawson W. Rawson, Mr. C. S. Loch, Mr. J. B. Lakeman, Rev. F. W. Lawrence, Mr. E. H. Carbutt, Mr. J. M. Mathias, Mr. T. E. Kerrigan, Mr. F. Sharp Powell, M.P., Mr. D. F. Schloss, Mrs. Amie Hicks, and Dr. Graham Balfour (the Chairman).

Eighth Ordinary Meeting, Tuesday, 19*th June,* 1888.

Dr. T. Graham Balfour, F.R.S., a Vice-President, in the Chair.

The following were elected Fellows:—

Thomas G. Ackland.
Frederick W. Bartlett.
John Evans.
Walter Newton Fisher.
Thomas Eli Gibson.
James Manuel.
John T. Trotter.
John Williams.
Robert Williams, junr.

Major P. G. Craigie read a Paper on "The English Poor Rate: "some Recent Statistics of its Administration and Pressure."

A discussion followed, in which the undermentioned took part:—Mr. Edwin Chadwick, C.B., Mr. Stanley Leighton, M.P., Mr. W. J. Harris, Mr. C. M. Kennedy, C.B., Mr. J. A. Fletcher, Sir Rawson W. Rawson, Mr. S. Bourne, and the Chairman.

The Council record with satisfaction that the anticipation expressed in their last report, that the number of members of the Society would again show an increase during the present year, has been fully realised. At the opening meeting of the session the President announced that the total number of members of the Society was higher than on any previous occasion; and at the Ordinary Meeting on 17th April, the Chairman was able to congratulate the Society on the fact that for the first time in its history the number of Ordinary Fellows exceeded 1,000. None the less the Council would urge on all Fellows of the Society the importance of using their best efforts to increase still further its numerical strength, and to augment its efficiency in the promotion of the purposes for which it was instituted.

The income of the Society in 1887 was of the ordinary character, exhibiting a slight increase under all heads except that of compositions for life membership. The ordinary expenditure was also of a normal character. The expenses of the Ordinary Meetings show an increase in respect of the expenditure that was entailed by holding the meeting at Willis's Rooms, on the occasion of the President's Inaugural Address. The extraordinary expenditure has been incurred in connection with the Charter and in closing the account of the Index to the Library Catalogue.

As mentioned in the last report, the Institute of Actuaries have vacated the portion of the Society's premises hitherto occupied by them. The back portion of the first floor has been let to Mrs. E. L. Blanchard as an office for the "Colonial Emigration Society." The remaining portion of the premises is now available to the Fellows of the Society; and the Council desire to call their attention to the increased accommodation that is now at the disposal of those who wish to make use of the Library. Special regulations have been framed for enabling the Fellows, under certain restrictions, to take out from the Library books of reference and similar works that may be required in the preparation of papers or otherwise.

Permission to hold the Ordinary Meetings of the Society in the Theatre of the School of Mines in Jermyn Street has been continued to the Society through the courtesy of the Education Department, and the Council have again conveyed to the Lords of the Committee of Council on Education their thanks for the accommodation thus afforded to the Society.

The first meeting of the session was postponed to the 6th December, to meet the convenience of the President (the Chancellor of the Exchequer). In order to accommodate the attendance which was expected on the occasion, the Council arranged that the meeting should be held at Willis's Rooms, an arrangement which they believe was fully appreciated by the large assembly who attended to hear the President's Inaugural Address. The other Ordinary Meetings have been held at the Royal School of Mines, and have been well attended. The Council believe that the papers read during the past session are not inferior in interest to those that have preceded them. While fully aware of the labour involved in the preparation of some of the papers laid before the Society, the Council hope that there will not be wanting among the Fellows others willing to undertake the task of devoting an equal amount of pains to the preparation of papers no less worthy of the reputation of the Society. It will be observed that in the present report the names of those who took part in each discussion are for the first time set forth.

In their last report the Council stated that a dutiful and loyal address of congratulation to Her Most Gracious Majesty the Queen, on the occasion of the completion of the fiftieth year of her reign, had been presented. The following reply has been received:—

"WHITEHALL,
4th August, 1887.

"Sir,

"I have had the honor to lay before The Queen the loyal and "dutiful Address of the President, Council, and Fellows of the "Royal Statistical Society on the occasion of Her Majesty attaining the Fiftieth Year of Her Reign. And I have to inform you "that Her Majesty was pleased to receive the same very graciously.

"I have the honor to be,
"Sir,
"Your obedient Servant,
(Signed) "HENRY MATTHEWS.

"The Right Honourable
"G. J. Goschen, M.P."

The Council having been moved to pass resolutions showing that public utility would result from a quinquennial census of large towns, and from more complete returns of emigration and immigration, have addressed letters urging these views to the President of the Local Government Board and the President of the Board of Trade respectively.

In continuation of the three parts of the General Index to the Journal already issued, a fourth part for the last fifteen vols. (Vols. 36—50) is being prepared. An appendix to it will be added, giving an alphabetical list of the authors and a classified list of the Papers for the whole fifty volumes. The Council regret that, on the score of expense, they are not able in the present state of the Society's finances to unite these four volumes into one General Index of the Papers read before the Society and an analysis of their contents.

At the Fourth Demographic Congress held in Vienna in September last, it was resolved that the next Congress be held in London in 1891, in conjunction with the Seventh Hygienic Congress, and that the Royal Statistical Society be asked to nominate two gentlemen to represent England on a Permanent Commission for the purpose of making the necessary arrangements. In accordance with the request conveyed through M. Inama-Sternegg, President of the Congress, the Council have nominated—Captain Sir Douglas Galton, K.C.B., D.C.L., LL.D., F.R.S., and Dr. William Ogle, M.A., F.R.C.P., who have both consented to serve on the Commission.

The Meeting of the British Association in 1887, was held at Manchester, where the Society was as usual well represented in Section F (Economic Science and Statistics), and papers were read by the following Fellows of the Society, viz.: Mr. Robert Giffen, LL.D. (President of the Section), Past President of the Royal Statistical Society, Mr. A. E. Bateman, Mr. D. Chadwick, Mr. Hyde Clarke, Sir T. H. Farrer, Bart., Professor W. Fream, Mr. Wynnard Hooper, Mr. G. A. Jamieson, Professor Leone Levi, Professor J. S. Nicholson, M.A., Mr. Thomas Wardle, and Mr. W. Westgarth.

The Society has to lament the deaths of the following members:—

Fellows.

		Date of Election.
d	Joseph Allen	1875
c	Right Hon. A. J. Beresford-Hope, M.P.	1856
	William Henry Bretnall	1886
	David Brown	1885
	E. H. Carter	1877
c	Lionel L. Cohen, M.P.	1877
	Hon. H. F. Cowper	1873
	Madgwick S. Davidson	1885
	George J. Fraser	1883
	Major-General H. Hyde	1879
p (16) *c d*	Professor Leone Levi, LL.D., F.S.A.	1851
d	William Lovely, R.N.	1880
	Sir William McArthur, K.C.M.G.	1873
	Samuel Spalding	1877
	William R. Winch	1872

c Indicates those who on one or more occasions had served on the Council.
d Indicates those who had been Donors to the Library.
p Indicates those who had contributed Papers, with the numbers respectively contributed.

Honorary Fellows.

d	Rev. Cesare Contini (Italy)…………………	1865
d	Professor Fr. Xavier von Neumann-Spallart, D.C.L. (Austria) …………………………	1879

The death of Professor Leone Levi occurred on 7th May, and was reported to Council on 10th of the same month, when the following resolutions were passed:—

Resolved:—

(*a.*) "That the Society desires to record its deep regret at the "loss it has sustained by the death of—

PROFESSOR LEONE LEVI, LL.D., F.S.A., &c.,

"who at the time of his decease was a Member of the Council, "and also a Member of the Library Committee, and the Census "1891 Committee, and whose services to the Society have extended "over an uninterrupted period of thirty-seven years.

"Professor Levi was a liberal donor to the library, and has "read sixteen papers to the Society on different subjects. He has "represented the Society as a Delegate at various meetings of the "International Statistical Congress, the British Association, and "the Social Science Association. He also served on several "Committees in former years, and was chosen to be a Vice-President of the Society in 1885."

(*b.*) "That a letter of condolence on the part of the Council "be addressed to Professor Leone Levi's widow."

Mrs. Leone Levi has since presented to the Society a valuable collection of some 500 parliamentary reports, &c., from the library of her late husband.

The following list of Fellows proposed as President, Council, and Officers of the Society for the Session 1888-89 is submitted for the consideration of the meeting:—

d Indicates those who had been Donors to the Library.

COUNCIL AND OFFICERS FOR 1888-89.

PRESIDENT.

T. GRAHAM BALFOUR, M.D., F.R.S., F.R.C.P., &c.,

Honorary Physician to Her Majesty The Queen.

COUNCIL.

- *Sir G. Baden-Powell, K.C.M.G., M.P.
- Arthur H. Bailey, F.I.A.
- Alfred Edmund Bateman.
- Charles Booth.
- Stephen Bourne.
- *Edward Hamer Carbutt, M.I.M.E., J.P., &c.
- J. Oldfield Chadwick, F.R.G.S.
- Major Patrick George Craigie.
- Francis Ysidro Edgeworth, M.A.
- Thomas Henry Elliott.
- Professor H. S. Foxwell, M.A.
- Frederick Brooksbank Garnett, C.B.
- Rowland Hamilton.
- Noel A. Humphreys.
- *Frederick Halsey Janson, F.L.S.
- J. Stephen Jeans.
- Charles Malcolm Kennedy, C.B.
- *Sir John B. Lawes, Bart., LL.D., F.R.S., &c.
- Robert Lawson, LL.D.
- George Blundell Longstaff, M.A., M.B.
- John Biddulph Martin, M.A.
- Richard Biddulph Martin, M.A.
- Francis G. P. Neison, F.I.A.
- William Ogle, M.A., M.D., F.R.C.P.
- Francis Sharp Powell, M.P.
- R. Price-Williams, M.Inst. C.E.
- *James Rankin, M.P.
- *Ernest George Ravenstein, F.R.G.S.
- *The Rt. Hon. The Earl of Rosebery, F.R.S.
- Sir Reginald Earle Welby, K.C.B.

Those marked * are new Members of Council.

TREASURER.

Richard Biddulph Martin, M.A.

SECRETARIES.

John Biddulph Martin, M.A. | Alfred Edmund Bateman.

Major P. G. Craigie.

FOREIGN SECRETARY.

John Biddulph Martin, M.A.

The abstract of receipts and payments, and the balance sheet of assets and liabilities on 31st December, 1887, are subjoined, together with the report of the Auditors on the accounts for the year 1887:—

(I.)—ABSTRACT *of* RECEIPTS *and* PAYMENTS *for the* YEAR *ending* 31*st* DECEMBER, 1887.

RECEIPTS.				£	s.	d.
Balance in Bank, 31st December, 1886 ...	£37	15	–			
Balance of Petty Cash.	13	11	3			
„ Postage Account	2	5	9			
				53	12	–
Dividends on New 3 per Cent. Stock				72	13	2
Subscriptions received:—						
49 Arrears	£102	18	–			
661 for the year 1887	1,388	2	–			
62 in Advance	130	4	–			
772				1,621	4	–
6 Compositions........................				126	–	–
Journal Sales				188	–	11
Advertisements in Journal				21	5	3
				2,082	15	4
Cheques that have not been presented, viz.—						
J. Stark, pension......	£10	–	–			
Harrison and Sons ...	104	14	–			
„ ...	10	2	6			
				124	16	6
Total...............				£2,207	11	10

PAYMENTS.				£	s.	d.
Rent	£314	16	11			
Less sublet	136	5	–			
				178	11	11
Rates and Taxes				58	9	8
Fire, Lights, and Water				38	1	4
Repairs, Furniture, &c.				43	9	4
Salaries, Wages, and Pension				418	19	2
Journal, Printing	£540	10	9			
„ Annual Index	5	5	–			
„ Shorthand Reporters	18	18	–			
„ Literary Services	43	17	–			
				608	10	9
Ordinary Meeting Expenses				39	8	4
Advertising				54	18	7
Postage and delivery of Journals...				89	17	9
Stationery and Sundry Printing ...				64	9	11
Library				86	14	10
Incidental Expenses				63	19	11
				1,745	11	6
Messrs. Harrison, for Index to Catalogue	£279	13	6			
Messrs. Janson and Co., Charter.........	103	7	6			
Messrs. Waterlow, for Common Seal..	7	1	6			
				390	2	6
				2,135	14	–
Balance per Bank Book.................	£55	13	10			
Balance of Petty Cash	16	4	–			
				71	17	10
Total				£2,207	11	10

(Signed) "J. O. CHADWICK, F.C.A.,
"H. B. HYDE,
"SAM. DYER NIX, F.C.A., } *Auditors*."

"2*nd February*, 1888.

(II.)—BALANCE SHEET *of* ASSETS *and* LIABILITIES, *on* 31*st* DECEMBER, 1887.

LIABILITIES.	£	s.	d.	£	s.	d.
Cheques paid in 1887, but not presented...	—			124	16	6
Harrison and Sons—						
Journal Account	166	2	-			
Miscellaneous Printing Account	17	10	-			
C. and E. Layton, Stationery	23	12	9			
Street Bros., Advertisements	14	10	6			
For Annual Index to Journal	5	5	-			
Messrs. Janson & Co., Legal Expenses ...	52	9	6			
Taxes	36	12	11			
Miscellaneous (as per List)	52	13	-			
				368	15	8
62 Annual Subscriptions received in advance				130	4	-
				623	16	2
Balance in favour of the Society* ..				5,267	19	7
				£5,891	15	9

ASSETS.		£	s.	d.
Cash Balances		71	17	10
2,500*l.* New 3 per Cent. Stock cost		2,371	13	11
Property: (Estimated Value of)—				
Books in Library.........	£1,500			
Journals in Stock	1,000			
Furniture and Fixtures	500			
		3,000	-	-
Lease of Premises (cost)	500			
Less amount written off during four years for time expired	140			
		360	-	-
Arrears of Subscriptions recoverable (say)		88	4	-
		£5,891	15	9

(Signed)
"J. O. CHADWICK, F.C.A., }
"H. B. HYDE, } *Auditors.*"
"SAM. DYER NIX, F.C.A., }

"*2nd February*, 1888.

---

* This balance is exclusive of the present value of the absolute Reversionary Interest bequeathed to the Society by the late Dr. Guy.

(III.)—BUILDING FUND (ESTABLISHED 10*th July*, 1873), BALANCE SHEET, *on* 31*st* DECEMBER, 1887.

LIABILITIES.	£	s.	d.
Amount of Fund Invested from last Account	205	14	11
Dividends received during 1887......	6	15	11
	£212	10	10

ASSETS.	Stock.	Cost. £ s. d.
Invested as per last Account in Metropolitan Consolidated 3½ per Cent. Stock, in the name of the Treasurer, R. B. Martin, Esq.—	£198 10 8	205 14 11
Purchased during the year............	6 - 5	6 15 11
	£204 11 1	£212 10 10

(Signed)
"J. O. CHADWICK, F.C.A., }
"H. B. HYDE, } *Auditors.*"
"SAM. DYER NIX, F.C.A., }

"*2nd February*, 1888.

"ROYAL STATISTICAL SOCIETY.

"REPORT OF THE AUDITORS FOR 1887.

"*The Auditors appointed to examine the Treasurer's Accounts of the Society for the Year* 1887,

"REPORT:—

"*That they have compared the Entries in the Books with the several Vouchers for the same, from the* 1st *January to the* 31st *December*, 1887, *and find them correct, showing the Receipts (including a Balance of* 53*l.* 12*s.* –*d. from* 1886) *to have been* 2,082*l.* 15*s.* 4*d., and the Payments* 2,135*l.* 14*s.* –*d.*

"*The Balance at Bankers and in hand amounted to* 71*l.* 17*s.* 10*d., subject to the payment of cheques at* 31*st December*, 1887.

"*They have also had laid before them an Estimate of the Assets and Liabilities of the Society at the same date, the former amounting to* 5,891*l.* 15*s.* 9*d., and the latter to* 623*l.* 16*s.* 2*d., leaving a Balance in favour of the Society of* 5,267*l.* 19*s.* 7*d., exclusive of the present value of the absolute Reversionary Interest bequeathed to the Society by the late Dr. Guy.*

"*The amount standing to the credit of the Building Fund at the end of the year* 1887, *was* 212*l.* 10*s.* 10*d., invested in Metropolitan Three and a Half per Cent. Stock, in the name of the Treasurer, R. B. Martin, Esq.*

"*They have verified the Investments of the Society's General Funds and Building Fund, and also the Banker's Balance, all which were found correct.*

"*They further find that at the end of the year* 1886 *the number of Fellows on the list was* 943, *which number was diminished in the course of the year to the extent of* 59, *by Deaths, Resignations, and Defaulters, and that* 92 *new Fellows were elected, and the Resignation of one Fellow was cancelled, leaving on the list on the* 31*st December*, 1887, *nine hundred and seventy-seven* (977) *Fellows of the Society.*

(Signed) "J. O. CHADWICK, F.C.A.,
"H. B. HYDE,
"SAM. DYER NIX, F.C.A., } *Auditors.*

"2*nd February*, 1888."

PROCEEDINGS *of the* FIFTY-FOURTH ANNUAL GENERAL MEETING.

THE CHAIRMAN (Mr. C. M. Kennedy, C.B.) moved "that the report of the Council, the balance sheet of assets and liabilities, and the report of the auditors for 1887, be adopted, entered in the minutes, and printed in the *Journal.*" It was only necessary for him to say a very few words. The Report was altogether satisfactory both as to finance, papers read, and the number of members, which for the first time reached 1,000. They had to express regret at the loss of an old and valued colleague—Professor Leone Levi—who had contributed many valuable papers to the meetings, and whose widow had recently presented a valuable collection of publications to the Library of the Society. He was sure the meeting would cordially concur in the action which had been taken by the Council in recording their deep regret at the loss the Society had sustained by the death of Professor Levi, and in the letter of condolence which had been addressed to his widow.

Mr. CHARLES BOOTH seconded the motion, which was unanimously adopted.

Mr. T. H. ELLIOTT and Dr. PANKHURST were chosen to be scrutineers of the ballot.

The CHAIRMAN said this was the year when they had to elect a new President. The Council considered themselves fortunate in submitting to the meeting the name of Dr. Graham Balfour as the President for the ensuing year. Dr. Balfour had taken a very leading part in the management of the Society during the period in which he had been one of the Vice-Presidents. He had contributed much to the work of the Society by papers and statistical knowledge; and the Council felt confident that in his years of office the Society would continue to prosper as it had done in the past. He had no special remarks to make with regard to the Council, except to express regret that the rule which obliges members to retire by seniority will in the ensuing year deprive us of the services of Mr. F. Hendriks, Mr. Hyde Clarke, and Mr. Hammond Chubb. The names were before them, and the meeting would wait the result of the ballot.

The ballot having been taken, the scrutineers reported that the President, Council, and Officers for the year 1888-89 as proposed by the Council had been unanimously elected.

The thanks of the meeting were accorded to the scrutineers.

The CHAIRMAN said certain gentlemen who were defaulters under Rule 9 had now, according to the regulations of the Society, ceased to be members. It was not usual to read the names; there were eight, which might be considered very small in proportion to the number of members.

Mr. J. G. **Rhodes** said that he had the pleasant duty of proposing that "the best thanks of the Society be given to the President, Council, and Officers for their services during the past year, and to the Chairman for presiding on the present occasion." He was sure that they, as the rank and file of the members of the Society, felt that they owed a very sincere debt of gratitude to the Council and Officers for the way in which the affairs of the Society were administered, and if anything were wanted to show the appreciation of the way in which this was done, it was furnished by the extreme unanimity of the proceedings upon that occasion. They had before them a financial statement which would bear examination. Altogether he felt that to be elected a Fellow of that Society was to have conferred upon one some slight measure of distinction. He had the greatest pleasure in moving the terms of the resolution which he had read.

Mr. **Justice Pinhey** said he had been asked to second the resolution, and did so with very great pleasure. He was not a very old member of the Society, but he was confident of the value of the services it had rendered in the past, and that they were so useful because they had been presided over by so eminent a President and by so hard working a body of Officers. He had much pleasure in seconding the resolution.

The resolution was agreed to by acclamation.

The **Chairman** said he must express his own very sincere thanks for the motion that had been passed. When he entered the room he had no expectation of taking the chair, for one of their Past Presidents, Sir Rawson Rawson, had fully intended to have been present. The Society had prospered under the presidency of Mr. Goschen, and with the management of the Executive Committee and the Council during their term of office; and it would be very gratifying to Mr. Goschen, the Executive, and the Council to feel that their efforts on behalf of the Society had been so cordially approved by the annual meeting. This concluded their business, and the Society would now adjourn to the 20th of November.

The ENGLISH POOR RATE: *some* RECENT STATISTICS *of its* ADMINISTRATION *and* PRESSURE.

By MAJOR P. G. CRAIGIE.

[**Read before the Royal Statistical Society, 19th June, 1888.
Dr. T. GRAHAM BALFOUR, F.R.S., a Vice-President, in the Chair.**]

CONTENTS:

	PAGE
Old Poor Law Figures	451
The Reform of 1834	453
Geographical Distribution of the Charge for Poor Relief	453
Thirty Years' Pauperism	454
Changes in Items of Relief	456
Distinctive Periods and Changes in In-door and Out-door Paupers	458
Paupers at different Dates Classified	464
Pauperism in Urban and Rural Counties	467
Reforms in particular Unions	472
Conclusions	476
APPENDIX. Tables I—V	478

NOT a few considerations, economic and statistical, justify the calling of renewed attention, if only by such notes as I now offer, to the influences which affect the distribution and pressure of the English poor rate. The tax so termed is recognised as the most characteristic and conspicuous of the several levies which make up our complex system of local finance. Its historical fluctuations, and its widely varying geographical pressure, alike yield lessons far from unseasonable at a time when the Legislature is engaged in trying to remedy some admitted inequities of its present incidence. Still more when the entire fabric of English local government is, for weal or woe, in the crucible of exhaustive reconstruction, it can hardly be either unwise or untimely to recall our past experience of the financial effects of the working, under different systems, of that English poor law which is in all respects the most unique and perhaps the most important function of local administration. Nor again in days when a complacent belief in a permanent rate of national growth and advancement, has given place to the uncomfortable sensation of admitting notable checks and depressions in more than one conspicuous industry, can it be inappropriate to ask if poor rate statistics furnish any reliable answer to the questionings which arise as to the progress or retrogression of society as a whole, or of its lower strata in particular. Rarely indeed can it be without profit to consult and compare, if we may, those continuous records which the more striking statistics of our national pauperism undoubtedly afford. The tale they tell, if the several figures have a uniform meaning, ought to give us some notion of the national wellbeing from time to time, and some index at all events of where and when the pressure of necessity and want on the classes whose margin of subsistence is least, is most patent and noticeable. There is always danger, however, that we may read off a little too readily the data of such a national barometer as the poor rate. Neither the official figure denoting the total sum, nor the arithmetical calculation of the rate in the £, nor the actual scale of outlay per head of the population, nor the proportion of recorded pauperism itself, will tell a true tale if we ignore the effect of the cross currents of varied policy, wise or foolish administration or changing circumstances, which affect the totals at any given time or place.

It is not however in my power to offer, in the paper which at short notice I have prepared, anything like a comprehensive view of the whole history of English pauperism, its growth and its abatement. Nor in bringing before the Society a few salient features in the more recent administration of the rates levied for the relief of the poor, do I wish to do more than stimulate and suggest to others, with more leisure, the researches they may make into the stores of information which lie buried in our monthly, biennial, yearly, and periodic poor rate returns. It is to these statistical records, which the Local Government Board and its official predecessors, the Poor Law Board and Poor Law Commissioners have provided, that I would refer the patient and exhaustive inquirer, reminding him also that in our own *Journal*, and more frequently in older days than now, he will find much help. Such elaborate, weighty, and detailed papers as Mr. Lumley[1] and Mr. Purdy[2] used to put before us more than a quarter of a century ago it is no part of my scheme to-day to continue, even if I had either the time, facilities, and ability to do so. But to the data there contained, and those marshalled in Mr. Palgrave's Local Taxation essay in 1871,[3] the thorough student must go for the bulk of the earlier statistics.

As a caution against the too facile comparisons of figures that are really different, I would only now recall the sometimes forgotten fact, that our English poor law has four distinctive epochs, beginning respectively in 1601, 1722, 1795, and 1834. In each a different administrative system appears; and it will be one of the objects of this paper to ask whether there is not some ground now for finding another new departure, in the reform, less notable and more gradual, which dates from about the year 1871.

At different times and with different weapons the English nation has striven, with more or less equity and more or less success, to provide a fairly safe and regulated distribution of relief to the destitute. An historical survey will show that although England shares with Denmark the distinction of being the only country where a special tax is exclusively appropriated to relief, yet even in England that tax was by no means always drawn, as is sometimes imagined, from one kind of property, nor has the nation's prudent provision against the last penalty of want been by any means always distributed with equal wisdom and discretion.

---

[1] *Journal* of 1858. [2] Ibid. of 1860. [3] Ibid. of 1871.

There is a fascination no doubt about an impost which has (not to go back to still less parallel times) an apparently continuous history of at least two hundred and eighty-seven years. But the poor rate which Queen Elizabeth's Act of 1601 imposed was so largely a differently levied, and so entirely a differently expended fund from that which bore the name in the jubilee year of Queen Victoria, that not much could be learned by contrasting, even if we were able to do so with any pretence to statistical accuracy, the 14,688,000*l.* raised in 1887 under this title, or even the 8,176,000*l.*, which is all that is really spent in relief, with the figures of the seventeenth century. And perhaps I may be allowed here to stipulate for the purposes of this paper, that I may be permitted to treat of relief only, and to disregard, except where otherwise expressly mentioned, the unwieldy bulk of what is called the nominal poor rate. That rate is really an omnibus tax, which we owe, with a good deal of the confusion of our local taxation, to an old and little quoted Act of George II,[4] that linked and concealed, under a kindly title, a varied group of less popular local charges.

The comparatively modest levies of the eighteenth century may be noticed in one word as representing at least a more normal and reasonable expenditure than the wholly exceptional and extravagantly swollen outlay of the first third of the nineteenth century. They are on several grounds no doubt better fitted for comparative examination, but the information is defective. We know however that the first year of so-called "authentic" returns, 1776, saw 1,720,000*l.* levied under the name of poor rate, and 1,530,000*l.*, just 4*s.* per head of the population, distributed in relief.

Between these days and our own stands out, as a beacon, not it would seem unneeded to-day, to warn poor law administrators of the certain result of perverting the poor rate from its proper object as a legal fund for the relief of the destitute, the terribly oppressive rates, and, still worse, the widespread demoralisation and ugly records of the poor law epoch of indiscriminate distribution from 1795 to 1834. The nominal levy of that period reached its year of maximum in 1818, when 9,320,000*l.* was levied, and

---

[4] 12 Geo. II, cap. 29.

7,871,000*l.* distributed among a population of 11,575,000 persons, who as a whole were therefore contributing 13*s.* 7¼*d.* per head. This enormous growth occurred in the course of a single generation, and no one now disputes that the burden was a self imposed one, due more to a pernicious policy and economic ignorance than to any other causes.

Ere a score of years had passed, the nation, enlightened by the famous report of 1834, had returned to more reasonable and economic theories of poor law administration. One half the former head rate then amply sufficed. No useful measure of existing burdens can thus be got by contrasting present figures with the temporarily inflated totals which preceded the new poor law in 1834. It may not however be out of place to express the satisfaction with which poor law reformers have seen that the House of Commons only a year or two ago directed the reprinting of the great report which opened the people's eyes to the abuses that distorted and perverted the old theory of poor relief. To that report, and to the figures so copiously given in Mr. Purdy's paper of 1860, as showing the immediate consequence of a really reformed poor law, as well as to the pictures drawn by that veteran poor law reformer Mr. Edwin Chadwick, who is still happily well able to defend his vigorous and successful policy, I would refer those who wish to study the wholly exceptional and abnormal poor law administration of the early part of this century.

But there is one consideration in connection with this bit of history I wish to note. It is not so often remembered as it should be that there were two Englands then, even as there are virtually two Englands now, in respect of the administration and pressure of the poor rate. In Table I in the Appendix I have traced the changes in population and in the head-rate of outlay for various years. The demoralising waste in distribution and heavy rates prevailing in the southern, and on the whole lower waged counties, have never been paralleled in the northern section of the country, and taking the year of the last census (1831) before the new poor law wrought its magic change, I find a remarkable similarity with what appears to-day in the geographical varieties of the charge for poor relief.

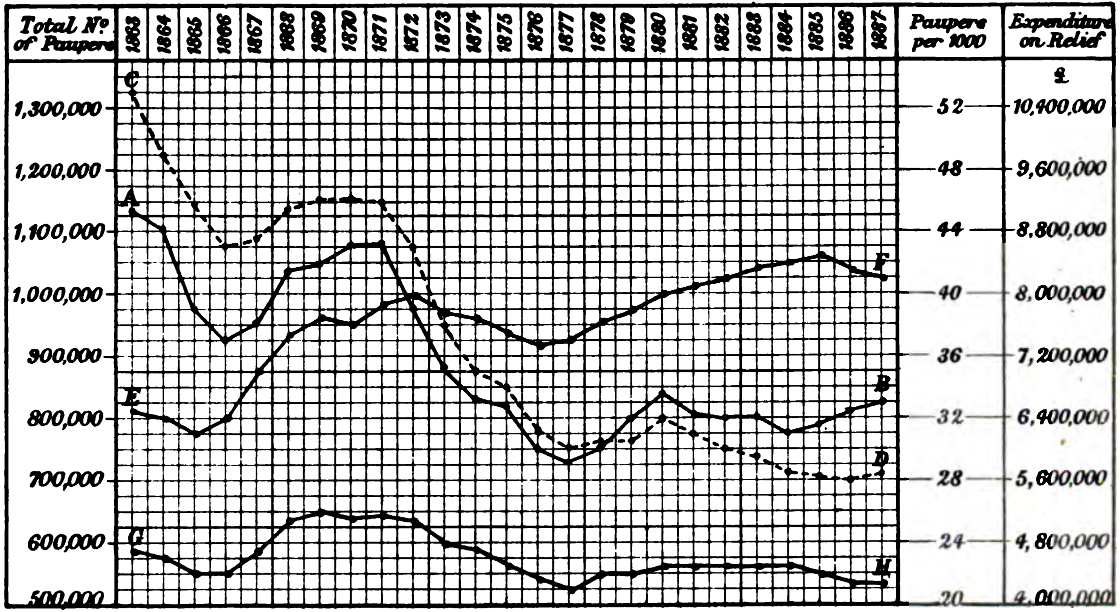
To the south of a line drawn diagonally from the Wash to the Bristol Channel will be found all the counties, thirteen in number, which under the old poor law exceeded the then average head rate of the cost of pauperism, 13*s.* 7¼*d.* To the north of another line, drawn with a southern curve, from the estuary of the Humber by the boundaries of Notts, Derby, and Staffordshire to the estuary of the Dee, lie all the counties where expenditure was least. These nine northern counties even then returned a cost of only one half the average head rate or 6*s.* 10*d.* per annum. In a like subdivision of England now the northern section would contain all the counties (except Salop and Worcester, which would now claim to rank in the lightly charged list) where the cost of relief is under 5*s.* per head of the population; while with only the addition of Rutland and Hereford to the southern section, there will be found in that area all the counties with a present cost of over 6*s.* per head.

Although the serial statements of our yearly returns are familiar to most of those who will read this paper, it may yet be worth while to reproduce and compress into one table, in concise shape, the changes which official records show for the country as a whole, and for each year in succession, not only in the absolute amount and relative cost of relief, but also in the amount and ratio to population of paupers maintained or assisted. Taking a thirty years' view the facts stand thus:—

TABLE A.

	Population Middle of Preceding Year.	Total Number of Paupers 1st January.	Mean Paupers per 1,000.	Total Cost of Relief.	Relief per Head.		Rate in the £.	
	Mlns.	Mlns.		Mln. £'s	*s.*	*d.*	*s.*	*d.*
1858	19·26	0·94	47·2	5·88	6	1¼	—	
'59	19·47	0·86	44·4	5·56	5	8½	—	
1860	19·88	0·84	42·9	5·45	5	6½	—	
'61	19·90	0·89	44·4	5·78	5	9¾	—	
'62	20·12	0·89	45·6	6·08	6	–½	—	
'63	20·37	1·14	53·0	6·53	6	5	—	
'64	20·63	1·01	49·2	6·42	6	2¾	—	
'65	20·88	0·97	45·6	6·26	6	–	—	
'66	21·15	0·92	43·3	6·44	6	1	1	4·5
'67	21·41	0·96	43·5	6·96	6	6	—	
'68	21·68	1·04	45·8	7·50	6	11	1	5·9
'69	21·95	1·05	46·4	7·67	7	–	—	
1870	22·22	1·08	46·5	7·64	6	10½	1	5·6
'71	22·50	1·09	46·1	7·89	7	–	1	5·6
'72	22·79	0·98	42·9	8·01	7	–¼	1	5·6
'73	23·10	0·89	38·3	7·69	6	8	1	4·4
'74	23·41	0·83	35·3	7·66	6	6½	1	4·4
'75	23·72	0·82	33·8	7·49	6	3¾	1	3·5
'76	24·05	0·75	31·2	7·34	6	1¼	1	2·8
'77	24·37	0·73	29·5	7·40	6	1	1	2·3
'78	24·70	0·75	29·5	7·69	6	2¾	1	2·4
'79	25·03	0·81	30·6	7·83	6	3	1	2·3
1880	25·37	0·84	31·8	8·02	6	3¾	1	2·4
'81	25·71	0·81	30·8	8·10	6	3½	1	2·3
'82	26·06	0·80	30·2	8·23	6	3¾	1	2·1
'83	26·41	0·80	29·6	8·35	6	4	1	2·2
'84	26·77	0·78	28·6	8·40	6	3¼	1	2·1
'85	27·13	0·79	28·3	8·49	6	3	1	2·0
'86	27·50	0·81	28·4	8·30	6	–½	1	1·5
'87	27·89	0·82	28·6	8·18	5	10½	1	1·2

NUMBER AND PROPORTION OF PAUPERS, AND EXPENDITURE ON POOR RELIEF, 1863 - 87.



In this diagram, the black line A. B. represents the total number of Paupers of all classes on the 1st January in each year. Scale in left-hand column.

The dotted line C. D. represents the proportion per 1,000 of the population of the "mean number" of paupers recorded in each year.

The higher red line E. F. gives the total expenditure on Relief.

The lower red line G. H. gives the expenditure on the two heads of in-maintenance and out-relief.

Harrison & Sons. Lith. S: Martins Lane. W C

I have placed in Table A in juxtaposition with the population, always a steadily growing figure, the actually enumerated paupers of all classes on 1st January in each year. This gives a measure of each winter's pauperism, though not always quite the maximum figure of the year. I give also from another source[5] the ratio which the mean pauperism of each year bears to population. This is arrived at by taking the mean between the numbers relieved on 1st July and 1st January respectively in each year ending at Lady Day, and calculating on the estimated population the number of paupers per 1,000 persons.

On six occasions only since 1858, in the two years 1863-64, and in the four consecutive years 1868-71, has the round number of one million paupers been found in receipt of relief on any new year's day, and the earliest of those occasions was that which claimed the maximum—the actual number recorded on 1st January, 1863, being 1,142,626. On that occasion, and on that occasion only, was there so large a ratio as 5 per cent. of our population on the relief lists. The later rise in pauperism in 1868-71 did not reach so high a level, and it was from the total of 1,086,000 in the last of these years that the most remarkable drop since 1834 occurred in the numbers of our paupers. Within six years' time the total was reduced by very nearly one-third, the record standing in January, 1877, at 732,523 only. Since that date we have had some fluctuations, and on the whole a slight reactionary rise from the lowest point. But if an absolute decline in numbers is no longer visible, and the improvement has been checked, yet reading the figures along with the yearly growing population, it will be seen that even in the last ten years pauperism is relatively less. Between 1863 and 1871 the paupers per 1,000 had only declined from 53 to 46 per 1,000. Between 1871 and 1877 the ratio had been brought down to 29·5, and in 1887 it stands at 28·6.

One question is certain to be asked by any observer of the different course taken during the past thirty years by the curve of actual pauperism and the curve of relief disbursed, as shown in the above table and represented in the diagram opposite. What is the explanation of the rise of the latter curve in the face of the fall in the former? The minimum year of expenditure was 1860, when 5,500,000*l.* sufficed. A mean total of 845,000 paupers were then relieved. The maximum year was 1885, when a sum of very nearly 8,500,000*l.* was spent, although the official mean of that year's paupers fell below 770,000. Thus each pauper cost 11*l.* and rather more two years ago, against 6*l.* 10*s.* per pauper twenty-four years before, when the price of wheat was some 10*s.* per quarter dearer, and commodities of most sorts certainly not lower in value than they now are.

---

[5] Sixteenth Annual Report of the Local Government Board.

It may be said that as 87 paupers out of every 100 were at the earlier date out-door paupers, and only 76 at the later, the excess of in-door paupers will explain the greater charge. This is however not the case. Only one-third of the larger cost can be thus accounted for. I have taken the minimum year of in-door relief; only once in thirty years have there been as few paupers in our workhouses as the 113,503 which was the mean of the year 1860. In three years' time the mean number had risen to 136,900, and in 1885, the year of maximum cost, it was 183,800, or 70,000 more than in 1860. But the extra cost thus entailed was just one million, while the entire advance was three millions. The details of the following table will give some answer to the question as to how this large advance occurred :—

TABLE B.

Years ended Lady-day.	Expenditure for Relief to the Poor, in Millions.							
	In Maintenance.	Out Relief.	Total In and Out Relief.	Maintenance of Lunatics.	Workhouse or other Loans Repaid, and Interest thereon.	Salaries and Rations of Officers and Superannuation Allowances.	Other Expenses of or immediately connected with Relief.	Total Relief.
	£	£	£	£	£	£	£	£
1857....	1·09	3·15	4·24	0·38	0·22	0·64	0·43	5·90
'58....	1·07	3·12	4·19	0·40	0·20	0·64	0·45	5·88
'59....	0·95	2·92	3·87	0·41	0·19	0·64	0·43	5·56
1860....	0·91	2·86	3·77	0·42	0·18	0·64	0·43	5·45
'61....	1·03	3·01	4·04	0·44	0·19	0·66	0·44	5·78
'62....	1·13	3·16	4·29	0·48	0·18	0·67	0·45	6·08
'63....	1·13	3·57	4·70	0·50	0·18	0·68	0·47	6·53
'64....	1·10	3·47	4·57	0·52	0·18	0·70	0·46	6·42
'65....	1·11	3·26	4·37	0·54	0·18	0·71	0·48	6·26
'66....	1·19	3·20	4·39	0·57	0·18	0·73	0·58	6·44
'67....	1·38	3·36	4·74	0·61	0·19	0·75	0·68	6·96
'68....	1·52	3·62	5·14	0·66	0·21	0·77	0·72	7·50
'69....	1·55	3·68	5·23	0·71	0·20	0·81	0·72	7·67
1870....	1·50	3·63	5·13	0·72	0·25	0·82	0·72	7·64
'71....	1·52	3·66	5·18	0·75	0·29	0·84	0·81	7·89
'72....	1·52	3·58	5·10	0·74	0·28	0·87	0·95	8·01
'73....	1·55	3·28	4·83	0·78	0·27	0·89	0·91	7·69
'74....	1·65	3·11	4·76	0·83	0·27	0·91	0·89	7·66
'75....	1·58	2·96	4·54	0·86	0·27	0·93	0·90	7·49
'76....	1·53	2·76	4·29	0·88	0·28	0·94	0·94	7·34
'77....	1·61	2·62	4·23	0·91	0·29	0·97	1·00	7·40
'78....	1·73	2·62	4·35	0·96	0·29	1·00	1·12	7·69
'79....	1·72	2·64	4·36	0·99	0·30	1·02	1·15	7·83
1880....	1·76	2·71	4·47	0·99	0·32	1·05	1·18	8·02
'81....	1·84	2·66	4·50	1·03	0·34	1·07	1·14	8·10
'82....	1·83	2·63	4·46	1·06	0·35	1·09	1·30	8·23
'83....	1·87	2·59	4·46	1·10	0·43	1·12	1·30	8·35
'84....	1·99	2·52	4·51	1·14	0·48	1·30	0·92	8·40
'85....	1·92	2·47	4·39	1·19	0·50	1·36	1·26	8·49
'86....	1·84	2·49	4·33	1·18	0·54	1·33	1·16	8·30
'87....	1·78	2·53	4·31	1·16	0·57	1·31	1·05	8·18

Here it will be seen that taking in and out relief together, as in the third column of Table B, there is little more spent now than in 1862 or 1857. The largest relative increase has been in the cost of lunatic paupers, which has multiplied nearly three-fold. The convenient column of "other expenses" has run up also from the modest 433,000*l.* of the earlier date, to 1,264,000*l.* in 1885, Even readjusted, as in 1887, by the distribution under their proper heads of the several items of the Metropolitan Common Poor Fund, this miscellaneous column still exceeds a million £. It should be noted also that the salaries, rations, and superannuations of the army of 20,000 paid officers in the Poor Law service has doubled in the thirty years. Altogether it would seem that only 52 per cent. of the total relief to the poor is now expended in actual in or out relief, against 69 per cent. in 1860, and 72 per cent. in 1863. Considerable variation of percentages however occurs in the items of expenditure between the different poor law divisions if these are examined in detail. The figures for each division I have shown for three periods in Table II in the Appendix, where it will be seen that the case of the metropolis, as to the growth of poor law outlay, differs a good deal from the rest of the country.

Some peculiarities of the metropolitan case are not new features. The proportion of out-relief in London was no more than 27 per cent. twenty years ago, against a general average throughout the country of twice as large a share, or 53 per cent., and the proportion of in-door relief was as much as 34 per cent., against only 18 in England generally. The common fund arrangement, whereby a portion of the cost of in-maintenance was in London spread over a wider field, is often said to have largely accentuated the metropolitan proportion of relief within the workhouse; but a comparison of the present with the past figures shows that while in 1887 out-relief had been so largely restricted in London as to form no more than 9 per cent. of the whole outlay, in-maintenance now also forms not a larger but a smaller proportion of the total than it did, or 29 per cent. now, compared with the 34 per cent. of 1858.

If we trace on a chart the recent curve of pauperism in England, the distinctive periods of our later poor law administration are the years between 1871 to 1877, wherein a great and notable decline was shown, and 1877 to 1887, where, although the growth of pauperism did not it is true increase step by step with population, there was a check to the earlier reform up to 1877, and some absolute increase in the aggregate numbers of persons relieved. For all England and Wales the figures are these, so far as the total pauperism at the commencement of each of the named years is concerned:—

	Total Paupers.			Per Cent.
1871....	1,085,661.	Decrease between 1871 and 1877....	353,138, or	32·5
'77....	732,523.	Increase „ '77 „ '87....	89,692, „	12·2
'87....	822,215.	Net decrease „ '71 „ '87....	263,446, „	24·3

But looking more closely into these figures we discover that of the 353,000 paupers cleared off the lists in the period 1871-77, all but 7,000 were in receipt of out-door relief, so that practically the reduction was in this section of pauperism, while in the second period, 1877-87, nearly half the increase, or 40,677 out of 89,692, was in the in-door class. May it not be concluded from these figures that the abatement of pauperism in 1871-77 was mainly (not of course wholly, for the effect of prosperous times must have been felt) an administrative abatement, the result of a reform in the procedure of many unions? It is no extravagant presumption to ascribe this new departure directly to the admonitions issued in 1871 by the Local Government Board, and to the useful exchange of views at the poor law guardians' conferences, which took their rise about this time, and have been so largely instrumental in recalling attention to the wisdom of adhering to the rules which all experience has shown to be best for the poor, and safest for the ratepayers.

Some fears are now expressed that this beneficent reform has spent itself, and that with the lowered franchise of 1885 a lowered tone of administration is again beginning to prevail, designed to seek rather immediate popularity with certain classes, than their ultimate real benefit.

Recent utterances in the legislature justify this alarm. But this dangerous doctrine has not been long enough prevalent to convert the reaction of the past decade into a simple replacement of the old recipients of relief once more on the books of the relieving officer. That some real and tangible diminution of profitable employment has been lately affecting the national well-being, is proved by the only true and ultimate test of increased destitution, a larger number of persons actually in the workhouse.

Obviously, however, before attempting generalisations, inquiry must be made whether the same phenomena were everywhere present. Was the abatement of pauperism in the earlier six years, and the check to the reduction in the last ten, a more notable feature in some parts of the country than in others? The poor rate returns enable us to distinguish in eleven great groups or divisions, the parallel condition of the different sections of the country. The total pauperism, in and out-door, at each date, and the respective increase or decrease, may thus be shown:—

Google

TABLE C.—*Paupers in Receipt of Relief at Three Dates.*

Divisions.	Number of Paupers on 1st January, 1871.			Number of Paupers on 1st January, 1877.			Number of Paupers on 1st January, 1887.		
	In-door.	Out-door.	Total.*	In-door.	Out-door.	Total *	In-door.	Out-door.	Total.
1. The Metropolis, parts of Middlesex, Surrey, and Kent	38,883	128,045	166,928	44,751	53,356	97,811	58,515	52,115	110,630
2. South-eastern (part of Surrey, Kent, Sussex, Southampton, and Berks)	22,531	98,967	121,489	18,211	63,319	81,513	22,025	64,658	86,683
3. South midland (part of Middlesex, Hertford, Buckingham, Oxford, Northampton, Huntingdon, Bedford, and Cambridge)	12,272	82,338	94,610	10,141	49,828	59,968	10,889	47,296	58,185
4. Eastern (Essex, Suffolk, and Norfolk)	11,854	75,443	87,213	8,619	44,928	53,504	10,182	43,951	54,133
5. South-western (Wilts, Dorset, Devon, Cornwall, and Somerset)	13,254	108,564	121,754	11,417	77,401	88,767	11,099	66,623	77,722
6. West midland (Gloucester, Hereford, Salop, Stafford, Worcester, and Warwick)	17,029	97,564	114,541	16,669	67,943	84,604	22,048	81,217	103,265
7. North midland (Leicester, Rutland, Lincoln, Nottingham, and Derby)	7,721	51,920	59,640	6,954	33,723	40,677	8,579	39,615	48,194
8. North-western (Chester and Lancaster)	22,974	84,022	106,973	21,629	44,596	66,216	29,430	69,737	99,167
9. York (West Riding, East Riding, and North Riding)	9,932	65,000	74,893	10,785	49,782	60,541	13,752	62,163	75,915
10. Northern (Durham, Northumberland, Cumberland, and Westmoreland)	6,190	46,672	52,850	6,206	29,746	35,952	8,277	36,148	44,425
11. Welsh (Monmouth, South Wales, and North Wales)	5,433	79,355	84,770	5,639	57,360	62,970	6,902	56,994	63,896
England and Wales	168,073	917,890	1,085,661	161,021	571,982	732,523	201,698	620,517	822,215

* The total is that of net number relieved, deduction being made for those relieved both in and out of the house.

Such a table as the foregoing enables us to localise the several increases or decreases which occurred in the contrasted intervals 1871-77 and 1877-87. The figures stands thus:—

TABLE C1.—*Increase or Decrease in Total Paupers in Divisions.*

Divisions.	Difference between Totals on 1st January,		
	1871 and 1877.	1877 and 1887.	1871 and 1887.
I. Metropolis	-69,117	+12,819	- 56,298
II. South Eastern	-39,976	+ 5,170	- 34,806
III. South Midland	-34,642	- 1,783	- 36,425
IV. Eastern	-33,709	+ 629	- 33,080
V. South Western	-32,987	-11,045	- 44,032
VI. West Midland	-29,937	+18,661	- 11,276
VII. North Midland	-18,963	+ 7,517	- 11,446
VIII. North Western	-40,757	+32,951	- 7,806
IX. York	-14,352	+15,374	+ 1,022
X. Northern	-16,898	+ 8,473	- 8,425
XI. Welsh	-21,800	+ 926	- 20,874
England and Wales	-353,138	+89,692	-263,446

TABLE C2.—*Increase and Decrease of Paupers distinguishing those Relieved In-door and Out-door, in Three Intervals.*

Divisions.	Difference between 1871 and 1877.		Difference between 1877 and 1887.		Difference between 1871 and 1887.	
	In-door.	Out-door.	In-door.	Out-door.	In-door.	Out-door.
I. Metropolis	+5,868	- 74,689	+13,764	- 1,241	+19,632	- 75,930
II. South Eastern	-4,320	- 35,648	+ 3,814	+ 1,339	- 506	- 84,309
III. South Midland	-2,131	- 82,510	+ 748	- 2,532	- 1,383	- 35,042
IV. Eastern	-3,235	- 30,515	+ 1,563	- 977	- 1,672	- 31,492
V. South Western	-1,837	- 31,163	- 318	-10,778	- 2,155	- 41,941
VI. West Midland	- 360	- 29,621	+ 5,379	+13,274	+ 5,019	- 16,347
VII. North Midland	- 767	- 18,197	+ 1,625	+ 5,892	+ 858	- 12,305
VIII. North Western	-1,345	- 39,426	+ 7,801	+25,141	+ 6,456	- 14,285
IX. York	+ 853	- 15,218	+ 2,967	+12,381	+ 3,820	- 2,837
X. Northern	+ 16	- 16,926	+ 2,071	+ 6,402	+ 2,087	- 10,524
XI. Welsh	+ 206	- 21,995	+ 1,263	- 366	+ 1,469	- 22,361
England and Wales	-7,052	-345,908	+40,677	+48,535	+33,625	-297,373

Here in every single province, so far as the total of pauperism is concerned, there is a reduction in the first period. If indeed an increase appears in in-door pauperism by itself in four divisions, it should not be forgotten that almost six-sevenths of this occurred in London alone. In the last ten years, on the other hand, there is, with two exceptions, a general growth of pauperism alike in the in-door and out-door lists. Since however the relative growth of population is itself so different in the densely peopled districts and the more rural areas, it is really necessary to see if and where in relation to the population the paupers and the burden of the poor rate has been abated or increased. The following figures may throw light on this point, and if I have taken the year 1870 instead of 1871 to start from here, I would recall the fact that the pauperism of these two years was as nearly as possible equal, and the rate of pauperism to population happens to be given in a special return to Parliament from the poor law figures of the year to Lady Day, 1870, adjusted to the nearest census figures, those of 1871. The last column of the following table is based not on the census figures, but, that all recent changes may be included, on the proportional estimates of population. These estimates are now used by the Local Government Board for counties and larger areas, though not available for individual unions.

TABLE D.

Divisions.	Paupers per Thousand Persons at 1st January,			Ratio of Out-door to In-door Paupers, the latter taken as Unity.		
	1870.	1877.	1887.	1870.	1877.	1887.
I. Metropolis	51	30	27	3·3	1·2	0·9
II. South Eastern	53	38	32	4·2	3·5	2·9
III. South Midland	63	42	34	6·3	4·9	4·3
IV. Eastern	69	44	38	6·2	5·2	4·3
V. South Western	63	47	42	7·8	6·7	6·0
VI. West Midland	42	31	32	5·5	4·1	3·7
VII. North Midland	42	29	27	6·0	4·9	4·6
VIII. North Western	36	20	22	4·2	2·1	2·4
IX. York	32	25	24	6·3	4·6	4·5
X. Northern	38	26	25	7·2	4·8	4·3
XI. Welsh	59	44	38	13·6	10·2	8·3
All England	48	37	30	5·4	3·5	3·1

Here appears the fact that while the reform of 1871 was pretty general, though greatest in the most pauperised districts, the check in the rate of reducing pauperism in relation to population between 1877-87 has been in a marked degree greater in the north and north-west than in the southern and south-western counties. In the west midland and north western districts alone has pauperism gained on population since 1877, although in Yorkshire and the north there is now only 1 pauper less in every 1,000 inhabitants than ten years ago, and in the north midlands only 2. Even in these bad times the south midland, south-western, eastern, and south-eastern counties, in which very conspicuous gains in the earlier six years were won, have contrived, the agricultural depression notwithstanding, yet further to reduce the ratio of their paupers. In the north no doubt the paupers were already fewer, and therefore continued reform less practicable. But I would invite attention to two other points in this table. The first is the relation between the general decline and changed ratio of in-door and out-door pauperism. The second is the comparative levelling of the old inequalities of ratio between district and district. In 1870, whole divisions showed an excess of 21 paupers more per 1,000 than the national mean, while one was 16 under that figure. In other words one division had more than twice as much pauperism as another. In 1877 the range was less. The largest excess was 10 above, and the lowest average 17 below the mean. In 1887 this is still more apparent. If it be true that there is still one peccant division, the south-western, that holds a bad pre-eminence in pauperism, and exceeds the mean by 12 paupers per 1,000, the entire extent of fluctuation is 20 only, and not 37 as before; for the north-west is now only 8 below the mean.

London, which in the six years before 1877 got rid of some 21 paupers out of the quota of 51 in each 1,000 which it possessed in 1870, has still further, in the face of its growing population, and in less prosperous times, reduced that diminished figure of 30 to 27, and its out-door pauperism is now less than the in-door.

The recent changes come out more clearly if we cut up the country into distinctive groups. Taking out London by itself as a disturbing factor if left in any combination of counties, we may contrast the more northern section, which is embraced by the divisions numbered VI, VII, VIII, IX, and X, with the region which has nearly always shown a more chronic pauperism, and, till lately, less disposition to meet it, namely, the southern, eastern, and Welsh counties, which make up the II, III, IV, V, and XI divisions. The result thus stated of the changes in the two periods are as follows, and a little study will bring out facts of no little interest as to the localities where the reaction was most felt. Not the least striking of these is the evidence of a growing pauperism in the manufacturing centres of Yorkshire and Lancashire:—

Table E.—*Increase or Decrease of Pauperism in Groups.*

	Between 1871-77.			Between 1877-87.		
	In-door.	Out-door.	All Paupers.	In-door.	Out-door.	All Paupers.
Metropolis	+ 5,868	− 74,689	− 69,117	+ 13,764	− 1,241	+ 12,819
North and north-west	− 1,606	− 119,388	− 120,907	+ 19,843	+ 63,090	+ 83,902
South, east, and Wales	− 11,317	− 151,831	− 163,114	+ 7,070	− 18,314	− 7,029

It may be well to note, in addition to the varying ratio of pauperism, the resultant changes in the cost at each period in each division, as under:—

TABLE F.

Divisions.	Cost of Relief per Head of Population.		
	1870.	1877.	1887.
	s. *d.*	*s.* *d.*	*s.* *d.*
I. Metropolis	9 –	10 5	10 2¾
II. South-eastern	8 3	7 7	6 4
III. South Midland	8 6	7 7	6 2
IV. Eastern	9 –	7 6	6 3½
V. South-western	7 8	7 1	6 3¾
VI. West Midland	5 6	5 4	5 1¾
VII. North Midland	6 1	5 8	4 9½
VIII. North-western	4 10	4 5	4 –¾
IX. York	4 4	4 6	4 1¼
X. Northern	4 8	4 6	4 –¼
XI. Welsh	7 4	6 10	5 10¼
All England	6 8	6 6	5 10½

Such a table illustrates the varied geographical pressure of the charge for relief, and it is no doubt true (excepting always in the case of London) that in densely peopled districts the pauperism is not only lightest, but the cost spread as a head rate on the population necessarily seems much smaller. This I have shown was the case even under the old poor law, and now we have it illustrated by the fact that at the present time the "over average" counties lie to the south, and the "under average" to the north. In the four divisions known as the II, III, IV, and V, the cost of relief per head is nearly uniform, and runs from 6*s.* 2*d.* to 6*s.* 4*d.* in 1887. In Wales the rate is just that of the average, or 5*s.* 10¼*d.* The north midland counties approach more nearly the lighter rates of the more northerly group, at 4*s.* 9½*d.* per head. The three most northerly English divisions, embracing seven complete counties, with an area of over 9 million of acres, and a population estimated last year to reach very nearly 9½ millions, find a levy of little over 4*s.* per head quite sufficient to relieve the whole pauperism of the district.

Paupers at Different Dates Classified.

The general term of "pauper" must itself be subject to further analysis before we can rightly appreciate what kind of changes have occurred in the recipients of relief, and where an administrative reduction has been effected this will show among what sort of persons it has taken place. In poor law phraseology all paupers, in and out-door, are distinguished as "ablebodied," "not ablebodied," as children under 16, vagrants, or lunatics—and the numbers, comparing 1858 with the totals at the beginning of 1871, 1877, and 1887, are thus divided in thousands:—

[000's omitted.]

All Paupers.	1858.	1871.	1877.	1887.
Adults (ablebodied)	171,	190,	93,	110,
„ (not „)....	382,	452,	346,	367,
Children	364,	392,	233,	270,
Vagrants	2,	4,	4,	5,
Insane	21,	48,	57,	70,

Note.—The exceptional growth of those technically regarded as "insane" is due in part to a far more careful analysis in accordance with the more modern practice of a special provision for lunatics not attempted at the earlier dates. In part also in the more recent years it has been officially accounted for by the greater longevity of these unfortunates under more skilful and humane treatment than before.

Taking rather the mean pauperism than the numbers on any given day as a guide, it is interesting, as indicative of the nature of the reduction, to distinguish between the percentage of those relieved who were technically ablebodied persons at the periods contrasted. The following table tells its own tale, and affords gratifying proof that it is most distinctly in the ranks of those whose physical ability to earn an independent living is acknowledged, that the pruning of our pauper rolls has occurred:—

Years.	Mean Number of all Classes of Paupers to each 1,000 Persons.	Mean Number of Adult Ablebodied Paupers to each 1,000 Persons.	Percentage of Ablebodied Paupers to Total Paupers.
1850	57·5	10·9	19·0
'58	47·2	8·0	17·0
'63	53·0	10·9	20·6
'71	46·1	7·7	16·6
'77	29·5	3·7	12·4
'87	28·6	3·7	12·9

Excluding lunatics and vagrants, the in-door pauperism by itself was made up of the following elements at the commencement of the poor law reform already alluded to and at the present time:—

[000's omitted.]

In-door Paupers.	1871.			1887.		
	Ablebodied.	Not Ablebodied.	Total.	Ablebodied.	Not Ablebodied.	Total.
Males	13,	41,	54,	13,	59,	72,
Females........	17,	27,	44,	14,	38,	52,
Children	20,	35,	55,	16,	39,	55,
	50,	103,	153,	43,	136,	179,

It will be seen there is a reduction here in "ablebodied" in-door paupers, although the total in the workhouse has increased. The remarkable reduction of pauperism is however not in this class, but in the out-door paupers, and a closer analysis of these, contrasting the same two years, will stand thus:—

[000's omitted.]

Out-door Paupers.	1871.			1887.		
	Ablebodied.	Not Ablebodied.	Total.	Ablebodied.	Not Ablebodied.	Total.
Males	44,	118,	162,	18,	79,	97,
Females	116,	266,	382,	65,	191,	256,
Children	282,	55,	337,	179,	35,	214,
	442,	439,	881,	262,	305,	567,

Especially is it here to be noted that the out-door list is mainly reduced by excluding those who should never have been paupers. In the ablebodied section the adult male reduction was as much as 60 per cent., in the female 44 per cent. in the sixteen years. Out of the entire out-door paupers, lunatics and vagrants of course excluded, no less than 38 per cent. at both dates were children under 16 years of age; 18 per cent. were men at the earlier, and 17 per cent. at the latter date; while 43 per cent. were females in 1871, and 45 per cent. in 1887.

The children returned as not ablebodied, it should be noted, mean either those relieved with parents who are not ablebodied, or orphans, or those relieved without parents. Children "boarded "out" either within or without the union to which they are chargeable, of whom there were 3,277 on the 1st January, 1887, are reckoned out-door paupers.

Both in 1871 and for 1887 the causes[6] which have led to the pauperism of the *out-door* paupers have been given, and these may be classified, so far as permissible, from two returns not however absolutely identical in form.

---

[6] Returns, Pauperism B of 1871 and B of 1887.

TABLE G.

Out-door Paupers.	1871.	1887.	Reduction per Cent.
I. Not ablebodied paupers, including all whose destitution is attributed to old age or permanent disability, and including also children dependent on those so suffering	423,206	305,231	28
II. Adult male paupers relieved on account—			
(*a.*) Of temporary sickness and sudden or urgent necessity	25,248	11,074	56
(*b.*) Of sickness, accident, or funeral in their family	9,310	3,843	59
(*c.*) Of want of work	9,654	3,506	64
III. Adult female paupers who are—			
(*a.*) Widows	63,151	41,792	34
(*b.*) Wives of ablebodied men relieved	36,181	15,105	60
(*c.*) Wives of prisoners	2,011	1,044	48
(*d.*) Wives of soldiers and sailors	588	146	75
(*e.*) Wives deserted or of non-resident males	5,883	3,682	37
(*f.*) Unmarried mothers	1,832	396	78
(*g.*) Single women	6,662	2,609	61
IV. Children relieved as—			
(*a.*) Dependent on widows	159,578	121,083	24
(*b.*) Resident with ablebodied fathers relieved	96,219	43,258	55
(*c.*) Resident with not ablebodied parents*	39,887	24,179	40
(*d.*) Orphans, or relieved without parents*	14,897	10,948	27
(*e.*) Children of deserted wives or non-resident males	16,091	10,300	36
(*f.*) Children of unmarried mothers relieved	2,992	653	78
(*g.*) Children with parents in gaol	5,838	3,446	41
(*h.*) Children of soldiers, &c.	1,368	367	73

* Included among "not ablebodied" out-door pauper children, and therefore appearing in the total given above in Section I.

These tables afford much material for reflection, as indicating where it has been found practicable by a wise administration prudently to check the spread of pauperism. I need hardly particularise the satisfactory heads of reduction which the percentages indicate, as each reader of the figures will observe the lesson they convey, and poor law reformers may be able to apply it.

Of the out-door paupers of 1871, nearly, but not quite, the largest portion, 48 per cent. in all, were officially set down as due to permanent "inability" of one sort or another, if we include the 40,000 children at that date included with their "disabled" parents. More than half is now thus accounted for, while another 25 per cent. in 1871, and nearly 29 per cent. now, is due solely to widowhood, if we include with the widows relieved the children dependent upon them. The diminution in single women relieved, over 69 per cent., and of unmarried mothers and their illegitimate children, 78 per cent., are most welcome proofs of amended administration in a direction where reform was much needed. Smaller demands on the poor rate are now caused by dependents of incarcerated convicts, and it is gratifying to see fewer of the women and children of men in the military and naval forces of the crown in the ranks of recipients of relief. The changed condition of military service and the much larger number of young and unmarried men in the ranks of the army will largely explain this exceptional reduction. Not least will it be remarked, that little more than one-third as many men came on these relief lists from "want of work" in 1887 as in 1871.

Pauperism in Urban and Rural Counties.

Any endeavour to trace the present pressure and recent changes of the charge for poor relief, naturally suggests the examination of smaller areas, either counties or unions, which may be classed as distinctively rural or distinctively urban.

But it is not always agreed how this classification can best be made. Perhaps the first distinction between areas which the census records enable us to draw is that of greater or least density, denoted by the number or the paucity of inhabitants to the square mile; but another classification may be made depending on the proportion which "land" as separately assessed bears to the rest of the rateable value;[7] or yet again, since occasionally perhaps counties may be sparsely inhabited without being more clearly devoted to agriculture than others which are more thickly peopled, we may follow the guide of the recorded percentage of population engaged in agriculture to the total population; or last of all, since the presence of towns, large or small, denotes the character of the population and industries of a district, there is the distinction which may be drawn between counties where a large proportion of the people are under what is recognised as urban or rural sanitary government, for this is not always ruled by actual density. In those several aspects I have marshalled in Table III in the Appendix a consecutive roll of counties, placing alongside the tale of their relative pauperism for the latest date available.

Regarding the metropolitan division as the county it is about to become, the following table shows the counties which stand at the two extremes. The first half of the table contains the most "densely peopled," the least "landed," the least "agriculturally "occupied," and the most "urban" districts: in the lower half of the table stand the counties at the other end of the scale in each of those particulars:—

---

[7] This classification can only be made for 1870, the Local Government Board not having furnished for any later date the statement of the amount of land as distinct from other property that is actually rated for relief of the poor. Of course the well known unsatisfactory character of the local assessments must not be forgotten in using this test.

TABLE H (1).—*Counties in the order of—*

Order.	Greatest Density at Census of 1881.		Least Percentage of Land to total Rateable Value, 1870.		Least Agricultural Population at Census, 1881.		Greatest Proportion of Population in urban Areas, 1881.		Lowest Pauperism, 1st July, 1887.		Least Cost of Pauperism.		
	Persons to One Square Mile.		Per Cent.		Per 1,000.		Per Cent.		Per 1,000 Persons.		Per Head of Population.		
												s.	*d.*
1	Metropolis	32,343	Metropolis	0·6	Metropolis	6	Metropolis	100	Lancaster	18·9	York, W.R.....	3	9¼
2	Lancaster	1,706	Lancaster	13·8	Lancaster	18	Lancaster	90	Middlesex.........	20·9	Durham	3	10¼
3	Middlesex	1,365	Surrey................	20·4	Durham................	19	York, W.R..	83	York, W.R	20·9	Cumberland...	3	11½
4	Stafford	840	Durham	23·8	York, W.R.	28	Middlesex	82	Salop................	21·0	Notts	4	—¼
5	York, W.R.....	792	Middlesex	24·0	Stafford	28	Stafford	77	Notts................	22·0	Lancaster	4	—¼
6	Warwickshire	766	York, W.R.	27·3	Middlesex	30	Warwick	76	Chester	22·1	Derby	4	1½
7	Durham	732	Warwick............	33·0	Warwick	37	Chester	68	Surrey	22·2	Chester	4	3½

TABLE H (2).—*Counties in the order of—*

	Least Density per Square Mile.		Most Land per cent. to Rateable Value.		Largest Agricultural Population per 1,000.		Largest Population in Rural Sanitary Areas.		Most Pauperism, 1st July, 1887.		Highest Cost of Pauperism per Head.		
												s.	*d.*
1	Westmoreland...	82	Rutland................	87	Huntingdon	169	Rutland	100	Dorset................	45·0	Metropolis....	10	2¼
2	Rutland	137	Lincoln	79	Rutland	158	Bucks	79	North Wales	43·3	Hertford	7	5½
3	Hereford	146	Hereford	75	Cambridge	156	Hereford	73	Norfolk	42·6	Hereford	7	4
4	Cumberland	165	Huntingdon	74	Hereford	149	Hertford	71	Hertford............	41·6	Rutland........	7	—½
5	Huntingdon	167	Salop	71	Lincoln	143	Westmoreland...	70	Somerset............	40·6	Wilts	7	—¼
6	York, N.R.	171	Wilts	71	Suffolk................	142	Bedford	69	Hereford	40·4	Norfolk	6	10¼
7	Lincoln	171	York, N.R............	71	Norfolk	133	Cornwall	69	Wilts	39·9	Oxford	6	10

Such a list of areas suggests how counties apparently even of one distinctive character may yet have great local differences. Thus Surrey finds a place in the "least" landed counties, thanks to the large value of urban property in the suburban belt immediately round London, yet no one can fail to find in some parts of Surrey parish communities the most typically rural. Chester again comes within the urban seven, if percentage of town-ruled population is to guide us, but not otherwise, while Durham, with its large mining villages and small agricultural population, possesses a certain semi-urban character, without being largely endowed with urban governments.

Turning to the pauper record, the latest figures of the pauper census of the 1st July last show us that the order does not altogether coincide with the first impression, that the most dense and urban counties, where work is presumably most plentiful and wealth most abundant, should prove the least pauperised. To begin with, London at once loses the place it holds at the top of each of the other lists, despite all that poor law reform has undoubtedly done for the metropolis of late. That is a fact not without significance in connection with what Mr. Booth has been lately telling us in his valuable analysis of the metropolitan classes lying just above the line of residuary pauperism. Lancaster, the second densest area of England, stands best as regards its proportion of paupers, but only fifth as regards cost. The place of advantage as regards lightest charge for pauperism is held by the West Riding of Yorkshire, which tried by all four tests of character is a peculiarly urban area. Durham stands second as regards cost, but only twelfth as regards the actual number of its paupers, and so cannot take rank in the least pauperised seven. Its condition in this respect is very like that of London, which takes, as a reference to Table III in the Appendix shows, the thirteenth place as regards pauperism, though its exceptional circumstances entail a far higher cost per head than any one of the 45 counties of England. Neither Salop, Nottingham, nor Chester would come into the seven most urban areas if tried by density, by houses, or by the non-agricultural character of the population, yet all take rank among the seven least pauperised counties; while Cumberland and Derby, the first the very antithesis of a densely peopled county, the other a county with just the average density which England as a whole exhibits, stand high as regards this freedom from the burden which pauperism involves.

Turning now to the seven counties at the opposite end of the scale in each case, it would seem that the grouping here is again open to some curious differences according to the tests applied. Mountainous Westmoreland is pre-eminently the least peopled spot.

But it is not one of the counties where land formed in 1870 over 70 per cent. of the rateable assessment, nor is it apparently inhabited by quite so agriculturally occupied a race as the counties named in the third column of my table; nevertheless 70 per cent. of its people escaped the fetters or lost the privileges of urban government. Rutland and Hereford alone appear in all four lists, and are high in each. Lincoln appears in three, and but for its towns, where 60 per cent. of its inhabitants live, it would have qualified by the last test also as a purely rural area. On the other hand, it is no surprise to find Cumberland, with its combination of mountains and of miners, grading as the fourth least populous area; although, as a reference to the more detailed table in the Appendix shows, it has not half the proportion of agricultural workers which Huntingdon or Rutland boasts. In the east too, Cambridge and Suffolk appear as rural in the latter respect though not coming within the *first* seven names in the other columns.

Since the least dense and most rural counties are expected to have most pauperism, it is curious to find that only one of the seven "least dense" counties, and only one of the seven most agriculturally occupied, takes a place among the seven most pauper-ridden counties. That one is Hereford, with 40 paupers per 1,000. She is overmatched in the race for a bad pre-eminence however by Dorset, North Wales, Norfolk, Hertford, and Somerset, all more populous areas than her own.

When we come to look at the relative cost per head of the burden, London, with a quota of paupers much less than the average of England, still expends 10*s.* 2½*d.* per head of her 4 millions of people in the relief of a mean number of 104,000 paupers, *i.e.*, roughly speaking, over 20*l.* per pauper; while the country as a whole effects the relief of its paupers for 5*s.* 10½*d.* per inhabitant, and at an average outlay of something over 10*l.* per pauper. Westmoreland, with a pauper roll at the latest date which has nearly the same ratio to her people as that of the metropolis, discharges her obligation to the destitute by a contribution of 4*s.* 8½*d.* per head; and Cumberland, with a slightly heavier pauperism, pays but 3*s.* 11½*d.*, as I have already noticed. Hertford, Hereford, Rutland, and Norfolk pay the penalty of their relatively large share of pauperism in a high head rate per person; while Wilts, which I remember indicating to this Society ten years ago pictorially with the blackest mark after London on my chart, so far as the monetary pauper burden was concerned, has still to put in an appearance among the 7*s.* paying counties, though now only in the fifth place, thanks to the material improvement and reduction in the ratio of her paupers to her population.

Selecting then some typical counties, conspicuously urban and rural respectively, from the foregoing list, I wish to ask what has been the relative course of the poor law relief in 1871-77, and in the less encouraging period 1877-87 in either group, in order to see if further light may be thrown on the meaning of the changes. And here I omit the always exceptional case of London in the urban group, and the North Riding of Yorkshire in the nominally rural. The intrusion of the latter indeed on the ground of its relatively small density, into what would otherwise be a distinctly agricultural group, would practically alter any contrast. It not only showed in the last decade an exceptional increase of pauperism, but it was notable for resisting the tide of general reform between 1871 and 1877, peculiarities which may perhaps be ascribed to the fluctuating circumstances of its iron works in the north:—

Total Paupers in Urban Counties.

Counties.	1871.	1877.	1887.	Difference, 1871 and 1877.	Difference, 1877 and 1887.
Lancaster	91,000	55,000	83,000	− 36,000	+ 28,000
Middlesex (ex-met.)	15,000	8,000	11,000	− 7,000	+ 3,000
Stafford	33,000	27,000	39,000	− 6,000	+ 12,000
York, W. R.	57,000	44,000	54,000	− 13,000	+ 10,000
Warwick	23,000	17,000	20,000	− 6,000	+ 3,000
Durham	25,000	18,000	24,000	− 7,000	+ 6,000
	244,000	169,000	231,000	− 75,000	+ 62,000

Total Paupers in Rural Counties.

Counties.	1871.	1877.	1887.	Difference, 1871 and 1877.	Difference, 1877 and 1887.
Westmoreland	2,184	1,433	1,681	− 701	+ 248
Rutland	1,342	817	867	− 525	+ 50
Hereford	6,649	4,908	4,888	− 1,741	− 20
Cumberland	8,598	6,376	7,359	− 2,222	+ 983
Huntingdon	3,312	1,984	1,402	− 1,328	− 582
Lincoln	21,855	15,397	16,118	− 6,458	+ 721
	43,890	30,915	32,315	− 12,974	+ 1,400

The conspicuous reduction, already noted over wider areas, of practically 30 per cent., occurred alike in the earlier period, in these urban and these rural counties, but it has not been followed in the country districts by a rise at all parallel to the rise in the manufacturing counties. In the last decade urban pauperism seems to have grown by 37 per cent. but rural by 4½ per cent. only.

The following rural counties are conspicuous by the reductions made in the ratio of their pauperism to population since 1870, the proportion per 1,000 inhabitants standing as under, the counties being ranged in the order of their greatest pauperism at the earlier date:—

Counties.	Paupers per 1,000.		Reduction per Cent. Effected in the Ratio per 1,000.
	1870.	1887.	
Wilts	77	42	45
Bucks	72	37	49
Cambridge	70	40	43
Bedford	70	39	45
Suffolk	69	38	45
Northampton	62	31	50
Berks	60	29	52
These may be compared with the parallel course of events in—			
All England	48	30	38
Metropolis	51	27	47
Lancaster	36	22	39
West Riding	31	22	29

Reforms in particular Unions.

The reduction of pauperism is however best traced in detail among the individual unions. I have ventured therefore to tabulate in Table IV in the Appendix the exact position, both as regards in-door and out-door paupers, of a series of unions, selected originally for another purpose as distinctly rural, containing from 80 to 86 per cent. of land within their assessment. As these are the class of unions where heavy pauperism is expected, the figures will show what administrative changes have been made, and in what direction pauperism has been checked.

In Table V in the Appendix will be found another list of unions which in the year 1870 showed an expenditure of over 10*s.* per head on relief, with the paupers per 1,000 in each case, and side by side with this a statement of the same particulars for the year 1884. It will be found that although the reduction of pauperism has been far from uniform, many remarkable reforms have taken place among what I may call these bad unions in recent times, and these cannot be ascribed to any general economic cause but to individual exertion and stricter methods of relief.

Among the more conspicuous reductions of cost, which contrary to the erroneous popular impression has followed from a stricter use of the house test, in the fourteen years' interval, I would call attention to the fact that the following unions succeeded in relieving their localities by upwards of 5*s.* per head: In the union of Rye, in Sussex, a pauperism of 91 per 1,000 was brought down to 41 per 1,000, and the cost of 14*s.* 5*d.* per head was reduced to 7*s.* 8½*d.*, a gain to the ratepayers of that union of 6*s.* 8½d., or more than the average cost of pauperism throughout the whole of England per head at the present time. Now this reduction was coincident with an altered ratio of from 4·9 out-door to 1 in-door pauper to 2·7 out-door to 1 in-door. More striking still is the case of Bradfield, in Berkshire, where a pauperism of 71 per 1,000 by careful administration was brought down to 16 per 1,000, and the 12*s.* 6*d.* formerly spent per head in that union, reduced to less than 5*s.* 2*d.*, a relief of 7*s.* 4*d.*, per head. Here the ratio of out-door pauperism to in-door fell from 4·2 to 0·9.

In the same county of Berks, the Wallingford and Wokingham unions reduced a pauperism of 80 and 82 per 1,000 to 26 and 27 per 1,000 respectively, saving the sum of 5*s.* 4½*d.* and 5*s.* 3¼*d.* per head of their population, and in both cases with the same notable pruning of the out-door lists.

In Northamptonshire two cases of equal interest may be quoted from the table, Brackley which showed in the latter year 30 paupers in lieu of the 68 in every 1,000 recorded in 1870, and Brixworth, where a pauperism of 83 had become one of 20 in the 1,000 in 1884, the reduction of cost in either case being 5*s.* 7¼*d.* and 5*s.* 11¾*d.*

There are many typical cases of reformed unions, such as Atcham in the country, Whitechapel, and St. George's in the East in London, and Manchester in the busy manufacturing areas, which are often quoted, and familiar to all poor law reformers. I quote however particulars of four others which are deserving careful notice, showing what can be and has been done in unlikely districts, and here I am able to bring up to a still later date than in the unions above quoted their records of paupers and of poor relief.

Unions.	Population, 1881.	Total Paupers, 1st January,			Cost of Relief, Year ended Lady-day,		
		1871.	1877.	1887.	1871.	1877.	1887.
					£	£	£
Aylesbury (Bucks)	24,607	2,141	1,210	734	14,669	11,549	7,614
Bradfield (Berks)	17,972	1,296	532	211	10,999	6,882	4,167
Brixworth (Northampton)...	13,336	1,226	489	210	8,400	5,454	3,354
St. Neots (Huntingdon)	16,907	954	493	196	7,472	4,743	3,851
		5,617	2,724	1,351	41,540	28,628	18,986

Here the reform has been not intermittent but continuous, and the results remarkable. Had only the practice of these four in no way exceptionally placed unions held good throughout England, how enormously would the pressure of the poor rate have been lightened, and how largely would the poor have been lifted out of the slough of pauperism. The poor rate would now have been reduced by millions sterling, and instead of 822,000 paupers, we should have less than 370,000. The voluntary margin therefore of charge which so large a portion of the country imposes on itself by declining to follow the example set in such unions as these is still great, and much room remains for further reform by strict adherence to approved principles.

The following table shows in a serial form what has been the actual course of the reform in three unions in the proportion of paupers (excluding lunatics and vagrants) to population:—

Year.	Aylesbury. — Per 1,000.	Brixworth. — Per 1,000.	Bradfield. — Per 1,000.	All England, last Week in January.
1871	87	91	77	50
'72	—	83	67	38
'73	—	77	63	34
'74	54	46	50	32
'75	56	48	50	29
'76	50	40	40	26
'77	48	33	31	24
'78	38	31	27	24
'79	32	29	23	25
1880	32	29	20	27
'81	28	27	22	28
'82	29	23	16	26
'83	28	23	14	25
'84	28	19	13	24
'85	25	16	11	24
'86	28	14	10	25
'87	28	14	9	25
'88	28	10	—	26

What such unions, situated under conditions precisely similar to those around them, have done others may do. The continued reduction which the specially reforming unions have succeeded in continuing even during the last ten years, when the reduction in proportion to population was generally checked in England, is a proof that the pruning of the out-door lists is not yet by any means carried as far as it might be elsewhere with general advantage. With such possibilities before us, we must take care lest by any legislative sanction to a mischievous form of distribution the disease of pauperism is again allowed scope to make head in England.

The facts of the Brixworth Union, which are known to me personally, offer a good example of the change effected simply by correct administration. The entire cost of relief, which was 8,091*l.* in 1870, is now 3,356*l.*, a saving of 4,735*l.* per annum among a population of 13,300 persons. The sum saved is equal to a rate of 10*d.* in the £ on the valuation of the union.

Contrasting the details of the two half years ending Michaelmas in this union there were:—

In each Half-year.	1870.	Cost.	1887.	Cost.
		£		£
Cases receiving in-door relief	130	320	124	404
" ordinary out-door relief	1,483	2,851	74	266
" medical relief	386		1	
Half-year's cost of in and out maintenance only	—	3,171	—	670
Or on the population of each date, per head	—	9*s.* –½*d.*	—	2*s.* 1*d.*

It is often said that individual reforming unions prove nothing by reducing their lists and their outlay for out-door relief, and that the paupers refused relief in one place, will simply migrate to some less strict locality, or crowd the house. I made special inquiry on the spot into this matter in the Brixworth Union while preparing these notes, and it is clear that there the history of the reform affords a contradiction to any such theory. There may be, as Mr. Rathbone has shown was accomplished in Liverpool, a most valuable "migration" occasionally effected from pauperised to busy and manufacturing districts. But under normal country conditions such as exist at Brixworth, the former paupers seem as a rule transformed into independent local workers. Thus while in Brixworth in January, 1871, there were 1,028 ordinary out-door paupers, and 73 cases receiving medical relief, and in January, 1887, only 66 ordinary cases, and no medical ones; yet there were only 2 more paupers in the house, or 106 as against 104. Again, 917 paupers were, it seems, in receipt of relief on 1st January, 1873, the year of greatest and most sudden change in this particular union. Of these 375 were taken off in a single twelvemonth, bringing the out-door paupers to the in-door down from the rate of 12 to 1, to 8 to 1, and the whole pauperism from 1 in every 14, to 1 in every 22 in the same interval. So far from the house being crowded by this most drastic reform, its inmates, on the contrary, were but 67 at the end of the year, compared with 73 when the out-door pauperism was so vastly greater.

It is right to ask what becomes of those permanently removed from the out-relief list, and in this typical case of a reforming union I am able, from the report of the Chairman of the Board, whose wise and untiring labours in poor law reform are recognised beyond his own county, the Rev. William Bury, to present the following analysis of the fate so far as possible of 241 persons permanently removed from the list in this union in a single year:—

Number of paupers struck off list	241
There have left the district (including one family of 6 persons)	12
The offer of the house was accepted by	3
Maintaining themselves with occasional help from relatives	9
Supported by relatives who seem well able to do it	55
There have died in the year	5
Remaining in district and entirely supporting themselves	160

Of the last group only 7 appear to have any difficulty, and of the 7 it is said 4 seemed cases proper for the workhouse, which had accordingly been offered, but refused.

This picture of dispauperisation exhibits no ruthless breaking up of families, no crowding of the workhouse. It simply means that whereas 241 of the inhabitants were kept as paupers at the beginning of the year, only 3 were so kept at its close.

Many other cases might be quoted in support of the experience of Brixworth. I might refer to what Mr. Doyle in 1872 reported from Shropshire and in the west. Mr. Longley's report of 1873[8] may be appealed to for like results in London itself, where refusal of out-door was imagined to involve heavy additions to the in-door lists. But I may perhaps claim to have made good, by the particular examples quoted, what I have advanced, on the faith of general figures, as to the reducible character of so much of our pauperism and so large a part of our poor rate.

Conclusion.

No student of poor law statistics, if at the same time conversant with the practice of boards of guardians, can fail to draw two conclusions from such figures as have been noted here. One of these is, that a large portion of the pauperism of this country is a preventible pauperism, since under conditions precisely parallel the disease, whether we regard it as hereditary or contagious, has shown itself susceptible to treatment, and to great and comprehensive restriction. The second is, that this being so, it is impossible to regard the numerical record either of pauperism of all sorts, or of relief, as absolutely conclusive evidence either of the progression or retrogression of the nation, or of the relative abundance or distress of particular districts. It may be largely a question of good or bad, of strict or lax administration. In the latter fact will be found justification for the proposal to regard in-door maintenance alone, rather than the total distribution, as the test of a relative claim to relief from the imperial exchequer. That alone supplies, by a test which must be more or less uniform in its operation, a means of judging what is the irreducible minimum of pauperism. The offer of food, clothing, and lodging in a specially constructed building, under such conditions as will most benefit the recipient of relief, or the country at whose cost he is relieved, is, as the Poor Law Commissioners of 1834 made plain, the only reliable test. The house must be the rule, and the power to resort to temporary out-door relief the exception, or the legal purpose of the poor rate is departed from, and its use statistically as a measure of destitution is gone. If one district obeys and another departs from the fundamental principle of the English Poor Law, the resultant figures cannot profitably be compared. The guardians have but a single duty, to relieve destitution. They have neither imposed on them the duty nor possess the right to apply the English poor rate to purposes for which it never was imposed. In strict accordance with their trust they may not distribute it as one would distribute private charity, in mitigation of many hard but not destitute cases. It is perhaps labour after all, and not land that suffers most from a perverted poor rate. It cannot be too often impressed on the all powerful democracy of these days that out relief, except as a temporary expedient for an emergency, is, so far as the working man is concerned, simply a means of reducing or keeping down his wages. Protection from an influx of foreign competitive labour is a demand we have heard of late not seldom. A wise and humane administration of the poor law, by eschewing the danger of indiscriminate out-door distribution, would more certainly than anything else—as was shown fifty years ago in 1834—protect the independent poor from the unfair competition to which they are now exposed by those who, because they derive part of their support from the poor rates, can afford to sell their labour for an inadequate remuneration.

---

[8] Report to Local Government Board on Poor Law Reform in London.

APPENDIX.

Table I.—*Expenditure on Poor Relief per head of Population.*

[000's omitted from Population columns.]

	1831.		1841.		1860.		1870.		1887.	
	Population.	Rate per Head.	Population.	Rate per Head.	Population.	Rate per Head.	Population.	Rate per Head.	Population.	Rate per Head.
I. *The Metropolis*—		*s. d.*		*s. d.*		*s. d.*		*s. d.*		*s. d.*
Middlesex (part)	—	—	—	—	2,029,	5 9	2,285,	9 9	—	—
Surrey "	—	—	—	—	580,	5 8	742,	6 8	—	—
Kent "	—	—	—	—	193,	4 1	226,	8 7	—	—
					2,802,	5 8	3,253,	9 -	4,150,	10 2¼
II. *South Eastern*—										
Surrey (ex met.)	—	10 11	—	6 10	261,	6 11	365,	7 10	520,	6 4
Kent "	—	14 5	—	7 7	544,	6 7	628.	7 6	752,	6 -½
Sussex	272,	19 5	300,	9 8	349,	8 6	421,	9 -	536,	6 8
Southampton	314,	13 8	355,	8 -	456,	7 2	526.	8 5	602,	6 8
Berks..................	145,	15 10	160,	9 3	206,	8 6	226,	9 1	260,	5 -¼
					1,816,	7 4	2,166,	8 8	2,670,	6 4
III. *South Midland*—										
Middlesex (ex met.)	—	10 -	—	5 6	187,	6 5	265,	6 3	459,	5 4
Hertford	143,	13 2	157,	7 9	177,	8 2	195,	9 5	206,	7 5½
Buckingham........	147,	18 9	156,	9 6	147,	8 10	155,	9 8	156,	6 5¼
Oxford	152,	17 1	162,	9 7	171,	8 6	178,	9 3	182,	6 10
Northampton	179,	16 10	199,	8 8	231,	7 3	248,	8 10	293,	5 6¾
Huntingdon	53,	15 3	59,	8 8	59,	7 10	58,	8 5	51,	5 10
Bedford................	95,	17 -	108,	7 7	140,	6 6	152.	8 2	155,	6 3
Cambridge	144,	13 8	165,	8 9	182,	8 10	192,	9 6	191,	6 9¼
					1,294,	7 9	1,448,	8 6	1,698,	6 2
IV. *Eastern*—										
Essex	318,	17 2	345,	9 11	380,	8 1	441,	9 3	620,	6 -¼
Suffolk	296,	18 3	315,	8 9	335,	7 10	347,	8 6	356,	6 -¼
Norfolk................	390,	15 4	413,	8 10	427,	8 5	431,	9 2	440,	6 10¾
					1,142,	8 2	1,219,	9 -	1,416,	6 3½
V. *South Western*—										
Wilts....................	240,	16 6	260,	10 3	236,	9 3	245,	10 2	249,	7 -¼
Dorset	159,	11 5	175,	9 2	182,	7 10	189,	9 1	182,	6 9¾
Devon	494,	9 -	534,	7 4	589,	6 -	606,	7 1	608,	6 4
Cornwall	301,	6 9	341,	5 0	362,	4 8	356,	5 7	310,	5 4¾
Somerset	404,	8 10	436,	7 2	457,	6 10	483,	8 2	594,	6 3¾
					1,826,	6 5	1,879,	7 8	1,943,	6 3¼
VI. *West Midland*—										
Gloucester	387,	8 8	431,	6 1	443,	6 -	489,	7 4	544,	5 11½
Hereford	111,	11 3	114,	7 7	107,	6 9	121,	7 6	116,	7 4
Salop....................	223,	7 10	239,	4 10	234,	5 4	240,	6 8	265,	4 8½
Stafford................	411,	6 6	510,	3 9	769,	3 3	877,	4 4	1,079,	4 10½
Worcester............	211,	7 11	223,	5 5	295,	4 5	336,	5 2	409,	4 8¼
Warwick	337,	9 7	402,	5 1	561,	4 2	630,	5 5	787,	5 -¼
					2,409,	4 6	2,693,	5 6	3,200,	5 1½

TABLE I—*Expenditure on Poor Relief per head of Population—Contd.*

[000's omitted from Population columns.]

	1831.		1841.		1860.		1870.		1887.	
	Population.	Rate per Head.	Population.	Rate per Head.	Population.	Rate per Head.	Population.	Rate per Head.	Population.	Rate per Head.
VII. *N. Midland*—		*s. d.*		*s. d.*		*s. d.*		*s. d.*		*s. d.*
Leicester	197,	11 7	216,	6 6	244,	6 –	275,	6 8	356,	5 –½
Rutland	19,	9 1	21,	7 –	23,	6 8	23,	8 6	23,	7 –½
Lincoln	317,	11 –	363,	5 9	404,	6 5	428,	7 9	481,	5 10¾
Nottingham	225,	6 5	250,	4 7	324,	4 8	355,	5 3	488,	4 –¼
Derby	237,	6 8	272,	4 1	294,	3 1	325,	4 –	422,	4 1½
					1,289,	**5 2**	**1,406,**	**6 1**	**1,770,**	**4 9½**
VIII. *N. Western*—										
Chester	334,	6 2	395,	3 11	470,	3 10	539,	4 10	669,	4 3¼
Lancaster	1,337,	4 5	667,	3 2	2,457,	3 5	2,849,	4 10	3,864,	4 –¼
					2,927,	**3 6**	**3,388,**	**4 10**	**4,533,**	**4 –¾**
IX. *York*—										
West Riding	976,	5 7	1,155,	4 3	1,347,	3 6	1,854,	3 11	2,397,	3 9½
East "	204,	9 11	232,	5 10	274,	4 1	306,	4 8	395,	4 9¼
North "	191,	8 10	205,	5 8	205,	3 10	235,	5 5	363,	5 4½
					1,826,	**3 8**	**2,395,**	**4 4**	**3,075,**	**4 1¼**
X. *Northern*—										
Durham	254,	6 5	324,	4 1	542,	3 2	742,	4 –	986,	3 10¼
Northumberland	223,	6 8	250,	5 2	343,	5 3	387,	5 9	460,	4 4
Cumberland	170,	5 5	178,	4 2	205,	4 3	220,	5 –	267,	3 11½
Westmoreland	55,	9 8	56,	6 3	61,	4 9	65,	5 –	64,	4 8¼
					1,151,	**4 1**	**1,414,**	**4 8**	**1,777,**	**4 –¼**
XI. *Welsh*—										
Monmouth	98,	5 5	134,	3 8	197,	5 2	220,	7 2	242,	6 –
South Wales	—	—	—	—	700,	5 2	767,	6 10	946,	5 6¾
North Wales	—	—	—	—	397,	7 5	435,	8 2	476,	6 4¼
					1,294,	**5 10**	**1,422,**	**7 4**	**1,664,**	**5 10½**

Note to TABLE I.—The separate divisions of the metropolis are not indicated separately for the two earlier years; nor is the estimated population given for these areas in the year 1887, and the head-rate on the population of 1881 if inserted in the last column would be misleading at the present time. The population and mean head-rate of cost for complete Poor Law Divisions, and for the two sections of Wales, are not shown for the earlier years.

[Table II.—*Proportion per Cent. of certain Items to Total Relief in Poor Law Divisions, Year ended Lady-day*, 1887.

Divisions.	A. In Maintenance.	B. Out Relief.	C. Maintenance of Lunatics in Asylums.	D. Workhouse Loans and Interest.	E. Salaries and Rations of Officers.	F. Other Expenses of Relief.
I. The Metropolis	29·0	8·9	12·0	14·3	20·0	15·8
II. South Eastern	23·4	29·6	15·2	4·4	17·7	9·7
III. South Midland	17·2	39·3	15·6	2·9	16·3	8·6
IV. Eastern	18·7	38·3	15·8	2·2	17·9	7·0
V. South Western	13·6	50·8	14·6	0·9	15·1	5·0
VI. West Midland	21·3	35·6	15·5	4·5	14·8	8·4
VII. North Midland	16·6	44·6	16·3	2·7	13·3	6·6
VIII. North Western	25·0	25·9	15·8	7·8	15·2	10·3
IX. York	18·3	41·0	13·5	6·7	11·8	8·6
X. Northern	16·9	41·4	15·1	5·5	12·5	8·6
XI. Welsh	11·5	58·5	11·3	2·8	10·0	5·9
England and Wales	21·7	30·9	14·2	6·9	16·1	10·2

Year ended Lady-day, 1868.

Divisions.	A.	B.	C.	D.	E.	F.
I. The Metropolis	32·5	28·7	10·3	4·2	9·6	14·7
II. South Eastern	21·2	45·6	8·2	3·2	12·2	9·6
III. South Midland	15·5	57·0	8·2	0·7	10·3	8·3
IV. Eastern	17·5	56·2	6·9	1·6	11·0	6·9
V. South Western	13·6	61·4	7·6	1·0	10·6	5·8
VI. West Midland	19·3	48·6	10·6	2·5	10·9	8·1
VII. North Midland	15·6	57·0	9·1	0·9	10·2	7·2
VIII. North Western	24·6	36·4	8·4	5·9	10·9	13·8
IX. York	17·4	50·6	8·9	3·7	9·5	9·9
X. Northern	15·2	55·8	9·5	2·7	8·5	8·3
XI. Welsh................	9·2	69·9	6·9	1·2	7·0	5·8
England and Wales	20·2	48·3	8·7	2·8	10·3	9·7

Year ended Lady-day, 1858.

Divisions.	A.	B.	C.	D.	E.	F.
I. The Metropolis	34·2	26·8	10·3	5·8	10·1	12·8
II. South Eastern	21·5	48·9	6·4	2·6	12·4	8·1
III. South Midland	15·1	59·6	6·5	1·5	11·1	6·2
IV. Eastern	15·4	58·3	5·2	2·3	12·1	6·8
V. South Western	12·3	63·0	5·8	2·9	11·2	4·9
VI. West Midland	16·5	52·9	8·1	3·1	12·5	6·9
VII. North Midland	14·4	60·6	6·7	2·3	10·4	5·5
VIII. North Western	18·3	46·6	6·2	6·4	11·0	11·6
IX. York	14·0	61·8	5·9	3·0	8·9	6·4
X. Northern	14·0	61·0	5·1	3·4	10·1	6·3
XI. Welsh................	7·0	74·8	4·5	2·2	7·8	3·8
England and Wales	18·2	53·0	6·8	3·4	10·9	7·7

TABLE III.—*Counties in the Order of—*

Order.	Greatest Density.	Percentage of Land to Total Rateable Value, 1870.	Persons Employed in Agriculture per 1,000 of Population, 1881.	Percentage of Population under Urban Sanitary Government, 1881.	Least Pauperism.
	Persons to a Square Mile. Census of 1881.				Paupers in each 1,000 of Population, 1st July, 1867.
1	Metropolis 32,343	Metropolis ... 0·6	Metropolis 6	Metropolis 100	Lancaster ...... 18·9
2	Lancaster 1,706	Lancaster ...... 13·8	Lancaster 18	Lancashire 90	Middlesex (ex met.) ...... 20·9
3	Middlesex (ex met.) 1,365	Surrey (ex met.) 20·4	Durham 19	York, W. R....... 83	York, W. R. ... 20·9
4	Stafford 840	Durham......... 23·8	York, W. R. ... 28	Middlesex (ex met.)......... 82	Salop .... 21·0
5	York, W. R. 792	Middlesex (ex met.) ...... 24·0	Stafford 28	Stafford 77	Nottingham ... 22·0
6	Warwick 766	York, W. R. ... 27·3	Middlesex (ex met.)......... 30	Warwick 76	Chester .... 22·1
7	Durham 732	Warwick ...... 33·0	Warwick 37	York E. R. 69	Surrey (ex met.) 22·2
8	Surrey (ex met.)... 651	Stafford .... 35·4	Monmouth 43	Cheshire 68	Derby .... 23·1
9	Chester 619	Sussex .... 36·5	Derby 44	Nottinghamshire 66	Warwick ...... 23·3
10	Worcester 564	Chester .... 38·8	Nottingham ... 49	Northumberland 66	Northumberland......... 23·3
11	Gloucester 479	Monmouth ... 40·7	Chester 50	Gloucester 63	Westmoreland 23·4
12	Kent (ex met.) ... 468	Gloucester ... 42·4	Northumberland 50	Durham 62	Durham......... 23·7
13	Nottingham 465	Kent (ex met.) 43·2	Surrey (ex-met.) 51	Monmouth 62	Metropolis ... 23·8
14	Derby 444	Southampton 43·3	Gloucester 58	Kent (ex met.) 59	Leicester ...... 25·0
15	Essex 391	Worcester...... 44·1	Worcester 60	Hampshire 58	Cumberland ... 26·0
16	Leicester............ 391	South Wales... 47·8	Leicester......... 60	York, N. R....... 57	Huntingdon ... 26·2
17	Southampton 351	Northumberland......... 48·3	Southampton ... 67	Worcester 55	Kent (ex met.) 26·2
18	Monmouth 351	Derby .... 50·0	York, E. R....... 73	Devon 54	Berks............ 27·2
19	Sussex 334	Nottingham ... 52·3	Cumberland ... 76	Leicester......... 54	York, E. R. ... 27·6
20	York, E. R.......... 333	York, E. R. ... 52·6	Kent (ex met.) 78	Derby 54	Northampton 29·0
21	Bedford 321	Hertford ...... 54·0	Devon 86	Surrey (ex met.) 54	Worcester...... 29·1
22	Somerset............ 294	Berks............ 55·9	Sussex............ 87	Sussex 53	Essex............ 29·2
23	Hertford 293	Essex............ 58·1	Essex 89	Essex 52	York, N. R.... 29·8
24	Northampton 280	Devon .... 58·9	York, N. R....... 89	Cumberland ... 50	Lincoln .... 32·1
25	Berks 276	Bedford......... 59·2	Somerset 90	Cambridge 42	Sussex .... 32·2
26	Suffolk 244	Cumberland ... 59·4	Northampton ... 92	Lincoln 40	Southampton 34·4
27	Buckingham 243	Somerset ...... 62·8	North Wales ... 105	Northampton... 40	Bedford......... 34·8
28	Cornwall 238	Leicester ...... 63·4	Cornwall 107	Somerset......... 39	South Wales... 34·9
29	Oxford 237	Buckingham 65·2	Hertford 108	Norfolk 39	Rutland......... 34·9
30	Devon 237	Cornwall ...... 65·8	Berks 111	Oxford 38	Gloucester ... 35·2
31	Northumberland 215	Oxford .... 66·2	Salop 111	Berks 36	Stafford .... 35·5
32	Norfolk 214	Northampton 66·2	Buckingham ... 113	Dorset............ 36	Buckingham... 35·5
33	Cambridge 213	Westmoreland 66·3	South Wales ... 115	Suffolk 35	Suffolk .... 36·0
34	Wilts 201	North Wales... 67·1	Westmoreland 117	Huntingdon ... 34	Cambridge ... 36·8
35	North Wales 195	Suffolk .... 67·5	Bedford 119	Wilts 34	Monmouth ... 37·1
36	Dorset 194	Dorset .... 69·8	Dorset............ 120	Salop 32	Oxford .... 37·1
37	South Wales 185	Cambridge ... 70·5	Oxford............ 124	South Wales ... 33	Cornwall ...... 37·8
38	Salop 182	Norfolk .... 70·7	Wilts 131	Cornwall 31	Wilts .... 39·9
39	Lincoln 171	York, N. R. ... 70·8	Norfolk 133	Bedford 31	Hereford ...... 40·4
40	York, N. R.......... 171	Wilts .... 71·2	Suffolk 142	Westmoreland 30	Devon .... 40·6
41	Huntingdon 167	Salop .... 71·2	Lincoln 143	North Wales ... 30	Somerset ...... 40·9
42	Cumberland 165	Huntingdon ... 74·2	Hereford......... 149	Hertford......... 29	Hertford ...... 41·6
43	Hereford............ 146	Hereford ...... 74·7	Cambridge 156	Hereford......... 27	Norfolk .... 42·6
44	Rutland 137	Lincoln .... 78·6	Rutland 158	Bucks 21	North Wales... 43·3
45	Westmoreland ... 82	Rutland ...... 87·0	Huntingdon ... 169	Rutland .... nil	Dorset .... 45·0
	Average all England ... 446	Average for England .. 38	Average for England .. 53	Average for England .. 68	Average all England. 27·2

TABLE IV.—*In-door Paupers in Rural Unions.*

Unions.	Population, 1881.	In-door Paupers, 1871.				In-door Paupers, 1887.			
		Able-bodied.	Not Able-bodied.	Insane.	Total.	Able-bodied.	Not Able-bodied.	Insane.	Total.
Caxton	10,357	113	65	7	184	44	56	8	108
Thingoe	16,386	81	45	—	126	34	64	8	106
Malmesbury	13,949	54	49	6	109	36	52	5	93
Pewsey	12,403	54	62	3	119	18	61	15	94
Ellesmere	13,708	29	68	10	107	27	47	9	86
Easingwold	9,533	15	16	3	35	10	28	1	40
Glendale	10,933	19	22	7	49	8	17	4	30
		364	327	36	729	177	325	50	557
Dunmow	17,990	183	126	3	312	59	105	8	176
Swaffham	12,859	67	46	7	120	9	20	4	34
Oundle	14,086	28	47	15	94	20	51	23	99
Winslow	7,943	26	41	7	74	8	47	6	61
Tavistock	29,190	69	114	9	192	31	87	12	130
Wilton	10,250	54	81	7	143	22	80	6	116
Llanrwst	14,109	5	25	1	31	2	24	4	33
		433	480	49	966	151	414	63	649
Garstang	12,375	—	29	—	29	5	13	8	28
Meriden	11,025	25	18	6	54	42	40	7	96
Church Stretton	5,672	29	32	8	73	19	42	6	67
Southwell	20,351	39	71	11	127	32	42	9	93
Thornbury	17,088	39	39	11	90	3	73	13	95
Romney Marsh	6,166	22	42	2	67	13	40	2	58
Patrington	8,758	20	38	2	62	7	26	1	34
		174	269	40	502	121	276	46	471

TABLE IVA.—*Out-door Paupers in Rural Unions.*

Unions.	Population, 1881.	Out-door Paupers, 1871.				Out-door Paupers, 1887.			
		Able-bodied.	Not Able-bodied.	Insane.	Total.	Able-bodied.	Not Able-bodied.	Insane.	Total.
Caxton	10,357	283	340	21	643	144	254	24	422
Thingoe	16,386	467	897	32	1,396	205	385	33	623
Malmesbury	13,949	437	615	25	1,077	200	350	43	593
Pewsey	12,403	416	498	19	933	256	363	37	656
Ellesmere	13,708	86	228	30	344	43	119	35	197
Easingwold	9,533	129	252	18	399	49	130	28	207
Glendale	10,933	200	379	31	610	80	162	28	270
		1,987	3,209	176	5,372	977	1,763	228	2,968
Dunmow	17,990	906	890	54	1,850	163	247	47	457
Swaffham	12,859	461	629	33	1,123	250	417	46	713
Oundle	14,086	416	457	35	908	114	353	28	495
Winslow	7,943	225	342	19	586	46	151	15	212
Tavistock	29,190	692	1,119	44	1,855	214	771	71	1,056
Wilton	10,250	445	661	30	1,136	71	242	35	348
Llanrwst	14,109	377	625	27	1,029	161	286	21	468
		3,522	4,723	242	8,487	1,091	2,467	263	3,749
Garstang	12,375	117	196	18	341	46	110	12	168
Meriden	11,025	126	291	35	452	108	201	27	336
Church Stretton	5,672	55	115	15	185	46	48	16	110
Southwell	20,351	213	708	26	947	116	361	33	510
Thornbury	17,088	273	532	34	839	129	191	44	364
Romney Marsh	6,166	222	95	8	325	88	63	11	162
Patrington	8,758	82	112	15	209	36	79	15	130
		1,088	2,049	151	3,298	569	1,053	158	1,780

Table V.—*Unions where the Pauperism Cost over Ten Shillings per Head in* 1870, *showing Reduction in Pauperism and Cost per Head in* 1884.

	1870.			1884.		
	Number of Paupers per 1,000.	Rate per Head of Cost of Total Relief on Population.		Number of Paupers per 1,000.	Rate per Head of Cost of Total Relief on Population.	
		s.	*d.*		*s.*	*d.*
Surrey (ex met.)—						
Kingston	55	11	1	31	6	7¼
Kent (ex met.)—						
Hoo	50	10	3	35	9	1¾
Malling	72	10	4	43	7	2½
Hollingbourne	65	12	1	35	8	5½
Tenterden	70	10	9	39	8	9¾
Bridge	71	10	6	30	6	1½
Romney Marsh	61	12	–	32	8	–¾
Sussex—						
Rye	91	14	5	41	7	8½
Battle	83	10	11	42	8	7
Hailsham	66	10	6	40	8	3
East Grinstead	70	10	5	45	8	–
Chailey	59	10	3	45	9	9¾
Lewes	59	16	8	56	12	5¾
West Firle	89	16	5	41	13	1¼
Newhaven	56	10	1	25	5	5¾
Petworth	86	10	6	59	9	2
Thakeham	73	11	9	48	9	7¼
Midhurst	67	10	11	40	7	9¾
Westbourne	70	11	1	53	10	1½
Southampton—						
Havant	69	11	–	47	11	2
Lymington	79	10	4	45	6	10
Ringwood	74	10	5	35	7	1½
Fordingbridge	79	11	2	57	10	–¾
Southampton	62	10	7	35	7	10¾
Stockbridge	74	12	2	38	8	4¾
New Winchester	67	11	2	30	6	9¼
Catherington	56	10	6	51	11	4½
Petersfield	65	10	5	48	8	–
Alresford	72	10	11	38	8	2¾
Alton	71	10	3	53	9	9
Basingstoke	92	12	8	36	8	–¼
Whitchurch	92	11	5	34	8	6
Andover	76	11	5	45	7	8½
Kingsclere	75	11	9	35	7	11¼
Berkshire—						
Newbury	83	12	10	38	9	3
Abingdon	76	10	11	33	7	4
Wallingford	80	12	–	26	6	7½
Bradfield	71	12	6	16	5	1¾
Wokingham	82	11	9	27	6	5¾
Hertfordshire—						
Ware	79	11	10	53	9	6¼
Bishop's Stortford	82	12	10	66	11	6¾
Hertford	68	11	9	41	9	4¼

TABLE V *Contd.—Unions where Pauperism Cost over* 10s. *per Head in* 1870.

	1870.			1884.		
	Number of Paupers per 1,000.	Rate per Head of Cost of Total Relief on Population.		Number of Paupers per 1,000.	Rate per Head of Cost of Total Relief on Population.	
		s.	*d.*		*s.*	*d.*
Buckinghamshire—						
Amersham	76	10	1	44	8	7¾
Aylesbury	82	11	6	31	7	3½
Buckingham	93	13	6	50	9	9½
Oxfordshire—						
Henley	79	12	3	48	9	1¼
Thame	70	10	2	44	8	5¼
Banbury	78	10	3	44	6	10¼
Northamptonshire—						
Brackley	68	11	5	30	5	9¼
Towcester	82	11	5	47	8	2½
Daventry	71	11	4	43	8	3½
Brixworth	83	11	8	20	5	8¼
Thrapston	69	10	1	41	8	5¾
Bedfordshire—						
Woburn	103	12	1	56	9	2½
Cambridgeshire—						
Linton	98	12	2	76	10	9
Newmarket	82	10	2	45	7	5
Whittlesey	68	10	2	44	9	11½
Wisbech	72	10	2	43	7	3¼
Essex—						
Ongar	76	10	11	40	7	5¾
Chelmsford	82	11	–	46	7	9¾
Maldon	88	10	5	41	8	11½
Colchester	66	10	8	34	7	4½
Witham	97	12	5			
Braintree	79	10	7	40	6	8¼
Dunmow	103	12	11	37	7	8¾
Saffron Walden	95	12	2	55	9	–¼
Suffolk—						
Risbridge	98	11	1	55	7	–½
Sudbury	89	10	7	45	7	7
Cosford	81	11	3	52	7	2
Mildenhall	76	10	2	58	8	1½
Hartismere	74	10	2	41	8	2¼
Hoxne	87	11	2	58	8	9
Norfolk—						
Forehoe	90	11	–	43	8	4
Henstead	72	10	–	44	8	4½
Blofield	65	10	4	37	7	8
Guiltcross	93	11	–	52	8	7½
Mitford and Launditch	78	10	11	46	7	11½
Walsingham	97	12	–	48	8	–¼
Freebridge Lynn	89	10	2	54	7	10¾
King's Lynn	79	11	1	39	7	2¾
Swaffham	80	10	10	60	8	10¾

Table V *Contd.—Unions where Pauperism Cost over* 10*s. per Head in* 1870.

	1870.			1884.		
	Number of Paupers per 1,000.	Rate per Head of Cost of Total Relief on Population.		Number of Paupers per 1,000.	Rate per Head of Cost of Total Relief on Population.	
		s.	*d.*		*s.*	*d.*
Wilts—						
Chippenham	75	10	11	47	7	9¼
Calne	102	12	10	40	8	6½
Marlborough	64	10	5	36	6	6½
Melksham	88	11	1	46	8	2½
Bradford	74	11	9	41	7	4¼
Westbury and Whorwelsdown	82	11	2	50	9	4¾
Warminster	113	12	11	58	8	7¼
Amesbury	77	10	7	43	7	8¾
Wilton	103	13	5	48	9	-¾
Tisbury	91	11	11	52	8	12
Dorsetshire—						
Sturminster	80	10	6	39	5	9¾
Blandford	84	10	9	52	8	6
Wareham and Purbeck	103	12	3	48	7	5½
Beaminster	91	10	5	60	9	6¾
Devonshire—						
Honiton	84	10	7	74	10	11¾
Dulverton	81	11	9	—		—
Somersetshire—						
Williton	87	10	-	59	7	11¾
Wincanton	83	10	1	60	9	4¾
Shepton Mallet	100	13	7	55	9	5
Clutton	82	10	9	57	8	5¾
Gloucestershire—						
Bristol	76	12	6	59	10	11¾
Newent	97	12	-	48	8	2¼
Cirencester	63	10	-	48	8	4¾
Leicestershire—						
Market Harborough	75	10	10	38	7	9¼
Lancashire—						
Liverpool	74	11	4	35	9	2¾
Manchester	78	10	-	31	9	8
North Wales—						
Pwllheli	85	10	-	56	8	3
Conway	83	12	4	39	8	6¼
Anglesey	110	12	6	60	8	7½
Holyhead	124	12	2	69	9	2¼

DISCUSSION *on* MAJOR CRAIGIE'S PAPER.

MR. EDWIN CHADWICK, C.B., said he considered that the paper presented by Major Craigie deserved distinguished thanks for its painstaking and lucid discrimination of experiences conclusive to settled principles of administration. He regarded the paper as superior to any—unless it be very recent—reports of the Local Government Board in which such discrimination ought to be displayed. But in experience for comparison with the past administration, the available statistics are very defective, as indeed all are. When the rates had reached the sum stated of 13*s.* per head of the population, the pressure became so severe that efforts were made to throw charges on other matters of expenditure, as on labour rates, road rates, and rates on other subject matters of pauperising expenditure, of which no accounts could be got, and could only widely be guessed at as additions of 2,000,000*l.* or more. When the executive commission took over the administration, the rates were returned as 9,000,000*l.*, but they could not be less than 2,000,000*l.* in addition. The rates now, if the former system could have been continued, must have been more than double what they are now even with a partial application of the principle then laid down. In his (Mr. Chadwick's) own Report of 1833, the principles of which were adopted by the Commission of Inquiry, by the Government and by Parliament—his conclusion was that it was essential to the working of every one of the improvements set forth that the administration of the poor laws should be entrusted as to their general superintendence to one central authority with extensive powers, and as to their details to paid officers acting under the consciousness of constant superintendence and strict responsibility. The duties of the unpaid and practically irresponsible, that commission considered should be confined to the exercise of supervisory functions only like those of visiting magistrates to prisons. But this decision was not carried out by the new executive commission, under circumstances which were too long to particularise. The return to the principles of 1833, that is to say, those of his (Mr. Chadwick's) own report, has been petitioned for by the Chamber of Agriculture, and by representatives of the boards of guardians. There is, however, a sufficient number of practical examples, such as at Whitechapel, St. George's in the East, Stepney, Manchester, Cambridge, and St. Neott's, where the original measure has been in course of practical operation by the guardians voluntarily adopting it, and by exercising only supervisory functions, looking over the relief lists and leaving the executive duties to competent paid officers. Thus in the Whitechapel Union there have been as many as 6,000 out-door paupers, now with increasing pressure of distress, there is scarcely any. In Manchester there have been as many as 20,000 out-door paupers, on ordinary occasions some 6,000, but now there are almost none. And so in the other districts mentioned. It has been objected by *à priori* reasoners to the instance of Whitechapel for example that this restriction of out-door relief must occasion an augmentation of crime. Crime has been reduced to less than one half of what it was previously. It was said you must trench upon private resources and diminish the deposits in the savings banks;—those deposits have largely increased. The system which leaves the executive administration to the unpaid and irresponsible, leaves it to the exercise of a very weak and timid administration of half a day in the week at the best of attention, and if there is no corruption—as is common. The relief by the permanent officer is on a competent study during every working hour during every day in the week. The common fallacy now of half a century of duration, on which out-door money relief is advanced, even if it be by a Sir Roger de Coverley, is this: "Oh, I know this poor old body well; the least relief we can give her is half-a-crown in money; if she is sent into the house it will cost double that." The large multiplication of the half-crowns that follows is overlooked. The late Rev. Thomas Whately, brother of Archbishop Whately, was the ablest local parochial economist whom they met with in the course of their local inquiry. He gave as a last text of exhortation, "Do not flinch from shutting off all the out-door relief to the widows and poor bodies. I did it to all in my parish, and by it I doubled the incomes of every one of them." But how did he double all their incomes? It was in this wise. This poor body had a brother who was a shopkeeper, and he allowed her *1s. 6d.* or *2s.* a week; she had a son in place who allowed her *1s.*; she had a daughter in place who allowed her another *1s.* She had also a patron, a former employer, who added to the contributions. Now the administrative element still unconsidered is this—that amongst the wage classes all persons have family or friendly connections, and if anyone is a perfectly lone person without any connection whatever, then assuredly a well regulated union house is the best place for him or her for relief, medical as well as other. He might present another example on a large scale. On the occurrence of the cotton famine in Lancashire, relief for 40,000 of the destitute was provided in sanitary earthwork under the superintendence of Mr. (now Sir) Robert Rawlinson. Of that relief only 7,000 accepted it. Now what became of the other 33,000? As a rule they had all family connections. One cotton spinner might have a brother who was a carpenter, another who was a bricklayer, another who was an iron-worker or a collier. He went and dined with them, and they would join in helping him in migration or emigration, or in some new source of employment found out for him. The effect of this mode of relief is to strengthen family feelings and social conditions, which out-door money relief destroys. One important course of improvement would be by conferring upon the new county councils the power of directing contracts for the supplies of food, for materials for the whole county, while considerable beneficial employment may be provided for the inmates of the several institutions, and an economy of large wholesale prices effected, and another very considerable improvement in the local representation would be obtained by clearing away from the local boards those who seek and obtain office solely for the sake of the contracts or the patronage in contracts. This would bring about what was originally intended, and would effect, as paid officers of experience agreed, considerable improvement in the administration, and a further reduction of at least 3 million £ of local charges. Out-door relief in money often goes to the payment of the rents of the bad tenements of the administrators, or to be spent in their shops, or even yet in aid of wages, or in ways baneful to the interests of the wage classes. A return to "Vestralisation," to which there is a tendency on the part of people who do not know what it once was, would aggravate the evils of the wasteful distribution of unpaid parish overseers, while the services of some 13,000 paid officers, though as yet imperfectly organised, has largely advanced wages. An extension of competent centralisation in wider local areas would still further greatly reduce the existing evils and excessive charges for the benefit of all classes, especially for the benefit of the wage classes.

Mr. STANLEY LEIGHTON, M.P., said he would give a few statistics of an agricultural union with which he was intimately acquainted, the Atcham Union, in illustration and support of the paper read by Major Craigie. His figures would confirm the statement of Major Craigie, that the strict regulation of out-door relief did not "force people into the house." That assertion, often repeated, was not supported by facts, and was contradicted by figures. The Atcham Union was agricultural, the wages were rather lower than the general standard, the rents for cottages and gardens were also low, ranging from 3*l.* to 4*l.*, and there were an unusually large number of "cowtakes" at rents of 8*l.* to 12*l.*, of which agricultural labourers were the tenants. Such being the general characteristics of the union, he would say that the principles of the new poor law had been carried out within the union since its formation, and he would now compare the figures of

	1836.	with	1856.
Population	17,855		19,088
Poor rates	£9,768		£4,895
Paupers—			
Families	1,065		243
Persons	1,395		329
Bastards	271		37
	1 in every 12 of population.		1 in every 58 of population.
	In-door.		In-door.
Adults	131		93
Children	65		83
Total	196		176

The children in the workhouse in 1856 were composed of the following classes: 30 illegitimate with mothers, 4 illegitimate deserted, 3 illegitimate orphans, 15 legitimate with their parents, 15 orphans, 4 deserted, 12 others. The same rules with the same results have been applied continuously. Thus immediately after the new poor law came into operation in 1838, the applicants for out-relief were 215, of whom 100 received out-relief, and 115 were offered the house; in 1856 the applicants for out-relief were 40, of whom 26 received out-relief, and 14 were offered the house. Of the 14 who in the last year were offered the house only 4 accepted, and of these only 2 stayed for more than a fortnight. Adequate relief, as had often been pointed out, could only be given in the house. It was downright cruelty to keep a family in a tenement scarcely fit for human habitation, on the edge of starvation, by giving a dole every week. When people talked of "breaking up the home," they ought to consider whether the home was worth preserving. Take such a case as the following, which was a real case, and typical of thousands: A man of 64, a wife of 38, and three children, living in a cottage with one bed-room. Out-door relief was asked and was refused; the house was offered, and with some regrets and difficulty at length accepted. During the first fortnight in the house the man was laid up in the workhouse infirmary in bed, the woman was confined, and the three children were put to school. Supposing 5*s.* or even 10*s.* a week had been given in out-relief, just conceive the state of things which would have prevailed in that one-bed roomed cottage during that fortnight. He would mention some of the rules which were generally acted upon in that union, excepting in cases of urgency or sudden sickness: No out-door relief granted (1) to any who rents more than half an acre; (2) or who pays more than 4*l.* 10*s.* rent; (3) or to orphan children; (4) or to deserted wives or children; (5) or to men who plead "no work;" (6) The whole cost of funerals is paid where necessary, but no grant is made towards a portion of the cost. The board of guardians always endeavoured to inform itself and to give information as to where work could be procured, and in times of difficulty to induce either private persons or public bodies to lay out money in improvements. Their object was to endeavour to raise the status of the labouring class. By putting itself in communication with the landlords and employers of labour as well as the poor, a board could do much. He recommended that the names of the out-door paupers should be published quarterly in every union, together with the names of their landlords attached, and of the rent they were paying, and the accommodation in their cottages. Out-door relief should be conditional on the cottage being in good repair. Another condition of such relief ought to be that it should be adequate, otherwise it was inevitable that it would interfere with the standard of wages, and depress the condition of the independent poor. If a man was in distress who should assist him? Upon whom had he legitimate claims? He would place them in the following order: (1) Children upon parents; (2) Parents upon children; (3) Relations upon relations; (4) Neighbours upon neighbours; (5) Tenants upon landords; (6) Labourers upon employers. And lastly, when destitute persons had exhausted all their claims, and when the whole world turned their backs upon them, then, and then only, had they a claim upon the ratepayers.

Mr. W. J. Harris said that in the early part of this century a most pernicious system came into vogue for relief to be given simply in lieu of wages, but of late years that system had been almost entirely departed from. He hoped however, that the practice would not now go too far in the direction of refusing all out-door relief in cases of hardship. In the union in which he was a guardian relief was never given in lieu of wages, and a reasonable amount of out-door relief was granted after each case had been properly examined into and reported upon. It had been found that out-door relief was in many cases cheaper, and also more humane. He was sorry to differ from Mr. Stanley Leighton on that point, but he was certain that it would often be cruel to separate the infirm and sick from their families. Major Craigie had mentioned the special case of Brixworth, which in 1881 had a population of 13,336, and said that there were in 1871 9½ per cent. in receipt of relief on the 1st January. That meant that 28½ per cent. of the whole population received relief at some time or other during that year. That seemed to imply that that parish must in 1871 have been in almost as bad a state as many of the places upon which such startling evidence was given in the Report of the Commissioners in 1834. The change was no doubt needed, but there was strong evidence afforded by Major Craigie's own statistics that it was too drastically applied. The cases of medical relief in 1870 were 386, and in 1887 only 1. There must be a good many in that neighbourhood who were now suffering from so drastic a change, and the small wages of the agricultural labourers must be rather severely and unfairly trenched upon in giving help to their own class. What the administrators of relief had mostly to look to was, that able-bodied men did not receive relief. If they were without work they must either go to the house or get something to do at such wages as employers could afford; and it might be depended upon that if this plan were strictly enforced nearly all of them would find something to do. In towns it was very different from what it was in the rural districts. Take London for instance. Of course the rent of rooms in London was so high, that it was of great importance to a family to get an infirm person taken into the house so as to get rid of him or her. In rural districts where rents were about one-fifth of those charged in London that was not so. The father or the mother or may be a sister might be infirm, but still able to do something in the way of attending to the children, or cooking the meals. The 2*s*. or 3*s*. given by the board of guardians in such a case enabled the wage earner to keep the poor man or woman out of the poor house, and to make some use of them as well. He entirely agreed with Mr. Chadwick that paid officers ought to be entrusted with the relief, and that no persons interested either in the rates or in the wages of the poor should have too much to do with the direct relief. The great thing that the labouring classes required to keep them away from the poor house was a little land around their cottages. Wherever he (Mr. Harris) had let a little land to labouring men they had always put money by. It kept them away from the public house, and in his parish they never had an able-bodied pauper—they had only two or three infirm widows on the books out of a population of 450. Then there should be some arrangement for national thrift. The Government had taken up the savings bank system with great vigour. Nearly all thrift societies in villages were badly managed. If the Government would take the management of such societies in conjunction with the savings banks, and draw up rules to be hung up in the schools, he believed that in the next generation there would not be one-fourth the present pauperism; for education to be practical ought to encourage a desire for independence.

Mr. C. M. KENNEDY, C.B., agreed generally with the conclusions of the paper, though he held that the increase of trade since 1831, and the development of the use of coal and iron had much to do with the diminution of pauperism. His experience was that in many cases out-door relief was more beneficial and cheaper than in-door relief, both in itself and in its results. Pauperism has a tendency to perpetuate itself; and that tendency is as great or greater in the house as in out-door relief. He regretted the loss of the apprenticeship system as a means of checking the perpetuation of pauperism: a most effectual means, he maintained, if rightly used. He fully agreed that reliance should be chiefly placed on local management; but thought that in estimating its value in particular instances, and the full meaning of the tables annexed to this important and interesting paper, questions of the rate of wages, cost of living, emigration, and opportunities for thrift affect largely the curve of pauperism. The duties of the Central Department in London should be those of supervision rather than of direct interference.

Mr. J. FLETCHER said that in Hampstead, where he was chairman of the board of guardians, an extreme course with regard to out relief had not been taken. An endeavour had, however, been made not to increase it, and though the population had nearly doubled during the last few years, the out relief remained stationary, and it was hoped that it would even be diminished. The board at Hampstead was perhaps too lenient in respect to widows, for there was a sort of tradition there that where a bread-winner had been taken away by death, the widow should be encouraged for a limited period. With that exception the out relief was confined to cases of urgency and illness, but the guardians had never been able to see their way to adopt the arrangements by which the Whitechapel guardians had got rid of out relief altogether.

SIR R. W. RAWSON thought when humanity and sympathy disposed the guardians to assist a widow, a fixed time should be named beyond which the out-door relief should not be granted. When the question of the management of the poor was likely to come before the legislature, he hoped that the facts contained in

Major Craigie's paper would afford a valuable guide to the future administrators of the poor law, and be productive of some relief of the burdens of the ratepayers.

The Chairman, referring to the reduction in the number of wives of soldiers and sailors who received out-door relief, as shown in Table G, said he thought it might to some extent be accounted for by the great change introduced into the army by Lord Cardwell in 1871, when the short service system began. He thought it would be well if Major Craigie could ascertain from the military returns what was the relative proportion of married soldiers in 1871 and in 1887.

Mr. Stephen Bourne said that there were two or three points connected with the rapid drop between 1871 and 1877. The former was the year in which there was a large increase in the export trade, pointing of course to a very considerable increase in the wages of the people, and thereby lessening the number of those who came on the rates. He also thought the cost of food was very much reduced at the same time. Major Craigie had plainly proved that it was possible to lessen the contributions for the maintenance of the poor, but he had not proved that such reduction was not concurrent with an alteration in the circumstances of the poor themselves. He had however disposed of the appeal to the amount of poor relief as a proof of the prosperity or otherwise of the country. It should not be forgotten that there was a great deal of private charity, and the diminution of poor relief did not show that destitution did not exist. Those who were benevolent helped their neighbours because the out-door relief was withdrawn. In 1876 the amount received by the revenue from alcoholic liquors was 1*l.* per head; now it was 16*s.* or 16*s.* 6*d.*, and it might fairly be claimed that that reduction had something to do with the incidence of poor relief. It was only by pursuing researches into what might be considered out of the way corners that the prosperity or otherwise of the country could be estimated.

Major Craigie (in reply) said that he only regretted that none of the party of reaction, who advocated a recurrence to a less strict system of poor law administration, on the ground that it was more popular, had put in an appearance that evening. Scarcely any of the speakers had impugned the general conclusions of the paper. The Chairman had no doubt rightly accounted for the diminished number of soldiers' wives relieved. He was bound to take exception to his friend Mr. Bourne's suggestion, that there was a close connection and interchange between the giving of charity and the paying of poor rates. The poor rate was not imposed to relieve the benevolent from ministering to the distressed, nor were the benevolent asked to relieve the ratepayers by assuming the duty properly falling on the poor rate. Totally different motives guided the two sorts of relief. The sole duty of a board of guardians was how best to relieve absolute destitution.

None he believed did less than this, and many boards mischievously attempted to do much more, and in so doing increased pauperism in their districts. The current of events in the unions he had mentioned ought to teach that there was still a wide margin for reform, and that there might be an immense reduction effected yet in respect of the burden of poor relief. Mr. Harris had alluded to the possibility of breaking up homes by the offer of the workhouse. The figures quoted in the paper seemed to dispose of this bugbear. Where most was done these consequences had not followed. But if even all that was prophesied happened in this direction, and one or two rate-maintained homes in a union were broken up by a sudden change of policy in one year, the number would be few in the future. Individual cases even of considerable hardship must not be regarded as paramount in this matter, without taking into consideration the effect on the community as a whole. In our alarm lest discomfort should attend the conditions under which relief was given to an individual, we may easily cause tenfold more harm to the State in general. It was above all things needful to maintain and mark the difference between a pauper and an independent self supporting citizen. Only on the previous night, in Parliament, reference was made by an ex-minister—Mr. Broadhurst—to the term pauper as harsh and obsolete. He suggested as a better term "industrial pensioner." If the mischievous notion which underlay that expression were really to get hold again in England, we should go back not only to the pauper rolls of 1871 and 1863, but perhaps soon to those melancholy ones before 1834. Whole towns and villages would have to hypothecate their revenues for the provision of the growing charge which the support of a list of industrial pensioners would involve. With reference to the question of medical relief, he could not help thinking from the reports he had read, that there was no step which tended more surely to the placing of a man on the regular pauper list than placing him on the medical list. He was certain that in the reformed union which he had visited while preparing the paper, no bad results either to the health or welfare of the union had resulted from what he had shown was the virtual stopping of so called medical relief. Co-operative clubs provided the men with medical attendance, so that even in illness they did not become paupers. One question raised by his paper he would like to have seen further debated, this was how far the notable drop in pauperism between 1871 and 1877 was due to national prosperity, and how far it was due to the enforcement of a proper policy in respect to poor law administration. Mr. Bourne suggested the large volume of our exports in these years as evidencing a manufacturing prosperity which might naturally lighten pauperism. But he would point out that the figures of his tables showed it was not so much in the busy manufacturing districts as in backward and formerly pauperised agricultural unions that the great reduction had occurred. This pointed to some different cause as at work, and it certainly appeared to be mainly a reformed administration which had lightened the pauper roll.

"West Barbary;" *or,* Notes *on the* System *of* Work *and* Wages *in the* Cornish Mines.

By L. L. Price, M.A., *Fellow and Treasurer of Oriel College, Oxford.*

CONTENTS:

PAGE
I.—Introduction: the Name of "West Barbary" ... 497
  Cornwall has sometimes been called "West Barbary;" and the name may be partly explained by the "air of antiquity" pervading the county ... 497
  This antiquity is illustrated by the permanence, among other examples, of the system of Wages in the Mines ... 498
II.—The Permanence of the System of Wages in the Mines ... 499
  One reason for this permanence may be found in the remoteness and isolation of the district ... 499
  This is illustrated by—
    Its comparative lack of Railways ... 499
    Its long immunity from political agitation ... 500
    And the antiquity of its mining industry ... 501
      Not indeed of Copper, but of Tin ... 501
      As the history of the Stannaries Court and Parliament proves ... 503
  Within recent years, however, changes have been at work, such as—
    Bitter political contention ... 506
    And extensive emigration ... 506
  A second and more potent reason is to be found in the efficacy of the system itself—
      For it is not peculiar to Cornwall ... 508
      And Cornish emigration is not without a precedent ... 508
      And the system has lasted through the varied vicissitudes of Cornish mining ... 509
III.—The Nature of the System ... 509
  The system consists of two varieties—
    Tutwork and ... 513
    Tribute ... 513
IV.—The Origin of the System ... 514
  Its origin is in all probability considerably remote; for the account given by M. Jars in 1765 ... 514
      (Which seems to refer to a period of transition ... 515
      And to point to a yet earlier date for its original introduction) ... 517
  Shows that even then the peculiarly Cornish practice of "ticketing" prevailed ... 517
  And may be reconciled with statements contained in earlier authorities
V.—Its Subsequent History ... 519
  This may be traced in several authorities ... 520
  But the most important change is indicated by two authors, who are in accord with—
      Hints given in earlier authorities ... 520
      Evidence furnished to the Mines Commission of 1864 ... 520
      And to a Committee of Parliament in 1887 ... 526
      And reports contained in recent issues of local newspapers ... 526
  Although the system of Tutwork has encroached upon the system of Tribute, yet Tribute is not defunct, and the cause of the change will be shown later ... 527

CONTENTS—*Contd.*

PAGE

VI.—Its Advantages 529
These must be distinguished from the *extraneous* influence of Wesleyan Methodism 529
And are—
(1) The mitigation, if not prevention, of strife 529
(Which illustrates the characteristic feature of co-operative production—
The elimination of the Employer 532
And not of the Capitalist) 532
(2) The coincidence of the interests of the Men and the fortunes of the Mine 533
In consequence of which—
The intelligence of the workmen is increased 534
(Although this may be due partly to the diversified nature of their work 535
But chiefly to the system) 535
Which is speculative in character 536
And probably not very influential in encouraging thrift 537
And the maximum of output is secured 539
VII.—Disadvantages and Abuses 539
Some of these are of a minor character 540
And the system cannot be held entirely responsible for the excessive mortality 540
(Which has been largely due to the climbing of ladders 543
Though it may indeed have been aggravated by the absentee ownership of the mines) 545
Nor for the fraud—
(Which has been too common in Cornish mining 546
And may be connected with the identity of merchants and adventurers 547
And more intimately with the speculative nature of mining industry) 548
(Which may be illustrated by the corner of 1870-72 548
And the recent action of a French Syndicate) 548
Nor for the grievances attaching to royalties and mine-leases 550
But another abuse is related to the length of the intervals of payment; and the diminution of this length is connected with the other main change in the modern history of the system, the encroachment of Tutwork on Tribute 551
VIII.—A comparison between Tutwork and Tribute 553
The Tributers enjoy in the highest degree the advantages of the system; for they are more responsible and more interested 554
But they are also peculiarly exposed to its disadvantages, for their earnings are more irregular 554
The wages of Tutworkers fluctuate indeed 554
According to the nature of the work 554
Or the district 556
Or the time 556
And the different earnings of Tributers may result in an equal average wage 557
The tributers may also work in healthier parts of the mines 558
But they often overwork 558
And their earnings, though generally higher 559
Are more irregular 560
The comparative decline of tribute may be ascribed partly to this irregularity 560

CONTENTS—*Contd.*

VIII.—*Contd.* PAGE

(And is *indirectly* connected with the decrease in the intervals of payment ... 560

And also *directly* as the tribute-accounts cannot be made up so rapidly) ... 561

But it may also be ascribed to the growth of mining knowledge 562

IX.—Conclusion ... 563

The new system is not free from abuses and complaints ... 563

And the intermediate "kind of" Tribute has no distant connection with the simple form ... 564

But the reasons which have led to the encroachment of Tutwork are powerful ... 565

And other changes may be impending, about which it would be dangerous to prophesy ... 565

LIST OF TABLES.

I.—A Tutwork "Bal-bill" of the Devon Great Consols Mine for November, 1849 ... 512
(Taken from "Cornwall, its Mines and Miners," p. 147.)

II.—A Tribute "Bal-bill" of the Devon Great Consols Mine for August and September, 1849 ... 513
(Taken from "Cornwall, its Mines and Miners," p. 147.)

III.—A Tutwork "Bal-bill" of Carn Brea Mine for May, 1863 ... 524
(Taken, together with IV—VII, from "Mines Commission Report," Appendix B, xii.)

IV.—A Tribute "Bal-bill" of Wheal Basset Mine for October, 1863 ... 524

V.— „ Dolcoath „ November, 1863 525

VI.—A Tutwork "Bal-bill" of „ „ „ 525

VII.— „ „ „ „ 525

VIII.—A Table showing the Relative Amounts of "Labour-cost" and "Tribute" at Dolcoath, exhibited by reports furnished to three-monthly meetings in 1885-86 ... 528
(Based upon extracts from local newspapers.)

IX.—Average Annual Number of Deaths per 1,000 Cornish Miners, per 1,000 Northern Colliers, and per 1,000 Cornish Males in 1849-53
(Based upon tables in "Mines Commission Report, pp. x and xi.) 542

X.—Average Annual Number of Deaths per 1,000 Miners and Males from Pulmonary Diseases, 1860-62 ... 542
(Extracted from "Mines Commission Report," p. xiii.)

XI.—Average Monthly Wage in three different districts in 1837 ... 555
(Taken from *Statistical Journal*, vol. i, p. 78.)

XII.—Average Monthly Wage in four different Mines in 1864 (*circa*) ... 555
(Based on "Mines Commission Report." Q. 7995.)

XIII.—Different Rates of Tribute in 1885-86 ... 558
(Based on statements collected from local newspapers.)

A.—Percentages of Increase and Decrease in Population of Cornwall for Decennial Periods, 1801-81 ... 507
(Based on "Census of England and Wales, 1881," vol. iv, pp. 9, 48, and 82.)

B.—Amount of, and Profit on, Candles and Powder consumed in a Year in four Mines ... 538
(Extracted from "Mines Commission Report," Appendix B, xi, p. 436.)

I.—*Introduction: the Name of West Barbary.*

"The first, last, and best county of England."

In the interesting biography of Samuel Drew, "shoemaker and "metaphysician," as he has sometimes been epigrammatically styled, we are told[1] that, when he went to live at the Cornish town of St. Austell, "the rude manners of the population which "had led some to call Cornwall 'West Barbary,' were fast yielding "to the benign influences of that Gospel which had been so "faithfully and zealously promulgated among its inhabitants by "the Rev. John Wesley and his coadjutors."

And yet, in spite of the "benign influences" of the Wesleyan revival, which perhaps was nowhere more pronounced, and has in no district been fraught with more abiding consequences, the name of "West Barbary" still survives, and even to-day is playfully applied on some occasions, if not by strangers, at least by the Cornish themselves, to their bleak and rugged county. It is not, indeed, that any warrant for the name can now be found in the "rude manners of the population;" for in this respect at least all accounts are unanimous in crediting the faithful and zealous labours of "the Rev. John Wesley and his coadjutors" with the most remarkable and gratifying results. A writer, for instance, in Knight's "Penny Magazine," stated[2] in 1836 that the "improve-"ment" which had taken place in Cornwall during the "last thirty "years" had been "very striking," and that "Wesleyan Methodism" had undoubtedly "had a share in producing this state of things." A writer in the "London Quarterly" in 1862 maintained[3] that Wesleyan Methodism had been the chief agency in effecting what might be described as a "revolution" in the moral and social condition of Cornwall. John Wesley himself, as early as 1781, had "remarked:[4]—"It pleased God the seed there sown has produced "an abundant harvest." "Indeed," he added, "I hardly know "any part of the three kingdoms where there has been a more "general change." And Mr. Wilkie Collins, writing in 1851, gave utterance to an opinion which might be echoed by many a grateful tourist, when he declared[5] that the "manners of the Cornish of all "ranks down to the lowest" were "remarkably distinguished by "courtesy."

But it is rather because in this extreme corner of England— "the farthest shire of England westwards," as Carew termed it in his "Survey of Cornwall"—we can detect more abundant and closer links with the past than elsewhere, and because in some respects at least the population seems to have remained unaffected by modern changes, that the name can still be applied. "It is "impossible," remarked[6] the Quarterly Reviewer in 1867, "to "spend even a few weeks in Cornwall without being impressed "with the air of antiquity which pervades that county." "There is "a continuity between the present and the past of that curious "peninsula, such as we seldom find in any other place." And hence it is that Cornwall has always been an attractive subject of study to the antiquarian,[7] be his researches architectural, linguistic, or legal; and that it presents no less interesting a field of inquiry to the economic antiquarian. The county abounds[8] with "survivals" of the past; and among these the system by which the mines are worked is as interesting and remarkable as are the ancient Celtic cromlechs, the extraordinary jurisdiction of the court of the Stannaries, and the few scanty traces which may still be found of the old Cornish language.[9]

---

[1] "Samuel Drew, the Self-taught Cornishman," 1861, p. 57.

[2] Knight's "Penny Magazine," 21st May, 1836.

[3] "London Quarterly," XIX, 1862, pp. 1—42.

[4] "Wesley's Works," vol. xiii, p. 297.

[5] "Rambles beyond Railways," by Wilkie Collins.

The economic student who is fresh from the perusal of that painful chapter of industrial history with which the last century closed and the present opened, and has traced the course of the sweeping revolution which was then effected in the methods of English industry, has seen how ancient landmarks were rudely removed, how new relations were substituted for old, and how, as one writer has put it, the word "manufacturer" was made to "forget its etymology," and the mediæval craftsman, who lived and worked together with his apprentices and journeymen, gave place to the modern "master," who employed hundreds of "hands" whose very faces he might not know, and to whose interests his own were linked by the unsympathetic bond of a "cash-nexus," might well be surprised to discover a district and an industry which seem to have escaped the disturbing influences of the "industrial revolution," and to have preserved with unbroken continuity the same general system of wages from the middle of the last century, if not from a yet earlier date, down to the present day.

---

[6] "Quarterly Review," vol. cxxiii (1867), pp. 35, &c. *Cf.* also "An Unsenti-"mental Journey through Cornwall," p. 13.

[7] It must be added that it has sometimes been the occasion of fanciful theories.

[8] The "Quarterly Review" remarks that "it has been truly said that Corn-"wall is poor in antiquities, but it is equally true that it is rich in antiquity."

[9] Dolly Pentreath, who is said to have been the last person who could talk in Cornish, died at Newlyn, near Penzance, in 1778; but fragments of the language are said still to live in the memory, *e.g.*, the numerals, and portions of the Lord's Prayer and the Creeds.—"Leisure Hour," 1879, pp. 167, &c.; "Quarterly "Review," vol. cxxiii, p. 40.

The social reformer, again, who has learnt to regard trades unions as one of the most powerful instruments for protecting the interests of the workmen, and yet at the same time as perhaps the most certain guarantee which is now available for the preservation of industrial peace, might well be astonished to find a district and an industry where strikes are said[10] to be "unknown," and "no "combinations or unions" exist.[11]

And lastly, the veteran co-operator, who has for years been persistently urging the extension of the principles, which have proved so successful in the distribution or consumption of wealth, to its production, and has met with little else save disappointment, if not failure, in practice, and—by a still more cruel dispensation of fate—with discouragement and dissension among his own brethren,[12] might well marvel to hear of a district and an industry where societies for co-operative distribution may be said without undue exaggeration to be practically non-existent, while the system of wages in the mines may be described without any great straining of language as a species of co-operative production.[13]

II.—*The Permanence of the System of Wages in the Mines.*

A partial explanation of the apparent enigma we have just noticed is undoubtedly to be found in the remoteness and separate character of the district. "There is no county in England with a "stronger individuality than Cornwall," remarked[14] the author of "John Halifax, Gentleman." And there is a story, which may indeed be fabulous but is nevertheless current,[15] to the effect that in an old geography book of the reign of Queen Elizabeth, the entry may be found: "Cornwall: a foreign country on that side of England next to Spain." At any rate a writer in "Chambers's "Journal" once described[16] it as "one of the most un-English of "English counties;" and to illustrate and justify this description the same writer pointed out that it was "the last region into which the "railway engine penetrated." And yet—curiously enough—the county enjoys a historic connection with the engine, for Richard

---

[10] "Penny Magazine," 27th December, 1834.

[11] S., *Q.* 1867, 5798. *Cf. contra*, "Mining Journal," 11th January, 19th April, and 24th May, 1879, for strike at Devon Great Consols Mine. As frequent reference will have to be made to the parliamentary papers, I shall for the sake of abbreviating the notes refer to the Report (1887) of a Select Committee of the House of Commons on the Stannaries Act (1869) Amendment Bill by the letter S, and to the Report (1864) of the Commissioners appointed to inquire into the condition of all Mines in Great Britain to which the provisions of the Act 23 and 24 Vict., cap. 131, do not apply, by the letter K.

[12] *Cf.* address of Mr. T. Hughes at the recent co-operative congress held at Carlisle.

[13] *Cf.* below, sec. vi.

[14] "Good Words," 1st January, 1867.

[15] "Leisure Hour," 1879, pp. 167, &c.

[16] "Chambers's Journal," 17th February, 1861.

Trevithick, who is said by some to have been, together with his fellow townsman Andrew Vivian, the first to demonstrate the practical utility of the locomotive,[17] was a "captain" in a Cornish mine; and at a still earlier time the Vicar of the Cornish town of Redruth is credited[18] with the fame of having identified the engine invented by Murdoch, as it came rumbling along the country road, pouring forth smoke, steam, and sparks, and casting a ruddy light across the darkness, with his Satanic Majesty himself.[19]

But, despite of this, Mr. Wilkie Collins, writing about Cornwall in 1851, entitled his book "Rambles beyond Railways," and, although the title was speedily contradicted[20] by railway extension, yet even to-day the district has not by any means entirely forfeited its early character. Partly no doubt in consequence of the difficulties which the frequent alternations of hill and valley present to the railway engineer, and partly also—if we may believe some accounts[21]—in consequence of the bitter contests which were carried on between the partisans of the broad and the narrow gauge at the time when the extension of railways into Cornwall was first contemplated, the traffic is still conveyed on a single line, and the trains are comparatively few in number and limited in speed. It is natural, then, that in such a district as this old customs and notions should survive, that even unreasoning superstition should stubbornly linger,[22] and that new ideas should make their way with comparative slowness.

And this conclusion derives support from other significant facts. The writer in the "Quarterly" to whom we have just alluded, stated that, in spite of the heated quarrels attending the early railway history of their county, the Cornish were "comparatively "indifferent to *political*[23] agitation," and took "little share in public "movements;" and he said that this isolation of Cornwall was partly due to its "geographical position." In this respect again the county has only recently departed from its former traditions. In the district comprising the new parliamentary division of Camborne, which is familiarly known as the "Mining Division," a political contest is said[24] not to have taken place for half a century before 1885, and the then member had retained his seat undisturbed for a period of some seventeen years.

---

[17] He first applied high pressure steam to locomotives.

[18] *i.e.* in 1784. *Cf.* "Life of Richard Trevithick," by F. Trevithick, p. 147.

[19] Richard Trevithick's engine, which was called the "Camborne Common "Road Locomotive," received also the local nickname of the "puffing devil." *Cf.* "Cornish Worthies," by G. W. H. Tregellas, vol. ii, p. 319.

[20] *Cf.* Preface to 2nd edit., 1861.

[21] "Quarterly Review," vol. cii (1857), pp. 289—329.

[22] Especially among the miners. *Cf.* "Leisure Hour," 1879, pp. 171, &c.; 1883, pp. 731, &c.

[23] The italics are my own. Cornwall, it is to be noticed, was conspicuous for its "rotten boroughs." *Cf.* "Leisure Hour," 1879, pp. 171, &c.

[24] *Cf.* statements reported in the "West Briton," 10th September, 1885, during the general election.

It is, we must remember, the mining district which has especially preserved this local and individual character. The eastern part of the county[25] seems to have been more easily susceptible to external influences, and the single words and phrases which still survive of the Cornish language are said to be found almost exclusively in West Cornwall. Nor is it without significance in this connection that the comparative decline—to which we shall call attention later—in the prevalence of perhaps the most distinctive feature of the Cornish system—the payment of tribute as it is called—has been more marked in the mines of East than of West Cornwall,[26] and that the most permanent home of that peculiarly Cornish "cost-book" principle to which we shall presently allude, has been the western part of the county.[27] In considering, then, the causes which have contributed to preserve the system of wages in the mines, we must pay some regard on the one hand to the separate nature of the county, and especially of the mining district, and on the other to the antiquity and distinctive character of the mines themselves.

Whether it be true[28] or not that the Cassiterides, from which, according to Herodotus, tin was obtained, were identical with the west of Cornwall, or were mistaken for it, it is at any rate probable that the Quarterly Reviewer, from whom we have previously quoted, is scarcely guilty of exaggeration when he maintains that the "industry of our ports, our manufacturing provinces, our coal districts, almost that of London itself, are mere products of recent ages, compared with the trade of the Cornish tinners." It is at least certain that the language of Carew when he says that the "tynne" of Cornwall—the "little "angle," as he calls it—"overfloweth England, watereth Christen"dom, and is derived to a great part of the world besides," might be applied with some deductions to a far earlier period than that at which he wrote.

It is true, indeed, that the mines do not seem to have been worked for copper until a comparatively recent date. A report[29] on the condition of the Cornish mines presented to the House of

---

[25] There are also, it should be mentioned, a few tin mines in East Cornwall; but they are less important, and the tin mining district, *par excellence*, is undoubtedly West Cornwall.

[26] S., *Q.* 1328.

[27] S., *Q.* 19 and 20.

[28] *Cf.* "Underground Life; or, Mines and Miners," by L. Simonin, translated and revised by H. W. Bristow, 1869, p. 280. *Cf.* also "Good Words," 1st February, 1867, pp. 120, &c., and "British Mining," by R. Hunt, p. 115.

[29] These statements are taken from an article by Sir Charles Lemon, contained in the *Journal of the Statistical Society*, vol. i, 1838, pp. 65—84.

Commons in 1799, stated that it was not "until the latter end" of the previous century "that copper was first discovered in Great "Britian;" but the report went on to remark that "that was in "working the tin mines of Cornwall which had been wrought time "immemorial." Borlase, again, whose book was published in 1758, but who probably wrote at an earlier date, maintained that "the "application of the Cornish to work the copper mines" was "not "so old as the generation then living." And Carne, summing up the question in the "Geological Transactions of Cornwall," argues that "on the whole it appears probable that previous to 1700 the "copper ore produced in Cornwall was principally if not wholly "from the tin mines, or at least from mines originally worked for "tin; and although it is by no means correct that it was not "till the latter end of the seventeenth century that copper ore was "first discovered in Great Britain, as stated to a committee of "the House of Commons in 1799, yet that appears to have been "the period when mines were first set at work purposely for "copper."

But attention has been drawn by M. Simonin,[30] among others, to the "remarkable manner" in which "tin alternates with copper "in the Cornish mines;" and Pryce in his "Mineralogia Cornubiensis," points out that copper is usually more remote from the surface than tin, and is consequently discovered at a later period. Of recent years again the amount of copper produced in Great Britain has declined, partly indeed in consequence of the opening and cheaper working of American, Spanish, and other foreign ores, but partly also because the Cornish mines, which once yielded copper, have now once more developed deposits of tin. To such an extent indeed has this been the case that a local newspaper reviewing the events of the year 1886, stated[31] that copper mining was almost a "past industry" in Cornwall; and the sales of copper ore which once took place at Redruth were said in another issue of the same newspaper to have been abandoned. It is tin, therefore, which occupies the largest space in the history of the Cornish mines; and it is to the systems attending the production of tin that we must look in the main for the origin of the peculiar traditions of Cornish miners.

The tin mines of Cornwall, as the report made to the House of Commons in 1799 stated, have been "wrought time immemorial;"

---

[30] "Underground Life," p. 304. Thus the famous Botallack mine was worked as a tin mine from 1721 at least, and about 1816 it was considered to be one of the most productive tin mines. In 1841 it was about to be abandoned, but a rich copper lode was discovered, while now it is once more worked for tin. *Cf.* Tregellas' "Guide to Cornwall," pp. 29 and 30.

[31] "Western Morning News," 3rd and 31st December, 1886. The sales were still continued at Truro.

and in the antiquity of the trade itself it is hardly fanciful to say that we may detect a reason for the long continuance of the system of wages. For this very antiquity gave a separate and distinctive character to the workers in the trade; and—to devote some attention to a point which is perhaps the most striking illustration of this distinctive character—the Cornish miners like the lead miners of the Derbyshire Peak enjoy the privilege of being under extraordinary legal jurisdiction.

The origin of the mining laws in Cornwall is said[32] indeed by a writer in the "Penny Magazine" to date back to a time considerably anterior to the Norman conquest. And, although we may not give credence to this tradition, and may hold that if we did it would be as little possible to obtain any accurate idea of the details of these laws as it would be to discover the relation in which the Phœnicians may have stood to the management of the mines, or the nature of the system according to which at a subsequent period the Romans may have employed the labour of the Britons, or the character of the bargains by which, at a still later time, the mines may have been leased by King John to the Jews,[33] yet it is beyond doubt that the privileges, which are said to have been secured by a few Cornish gentlemen during the disturbances in the reigns of the monarchs who succeeded that sovereign, were confined by a charter of the 33rd year of Edward I.[34] The right of working the tin had probably been vested in the Norman sovereigns as Earls of Cornwall, and the privileges of establishing a separate court of judicature and a "kind of parliament," of collecting for the lords a toll of one-fifteenth[35] of the tin produced, and of prescribing conditions with regard to mining boundaries, were probably conceded in return for a payment of 4*s.* per cwt.[36] to the Earl of Cornwall. In the 33rd year then of Edward I this charter was granted, and subsequent enactments were passed in the reigns of succeeding sovereigns. In the reign of Henry VII indeed the charter was forfeited for a time on account of "irregularities" in the conduct of the tinners; but it was restored on their submission, and the restoration was accompanied by the grant of the additional privilege that *no* law relating to the tinners should be enacted without the consent of twenty-four gentlemen tinners, who were to be chosen by a mayor and council in each of the "Stannary"[37] divisions. This charter was confirmed by

---

[32] "Penny Magazine," 16th December, 1843.

[33] *Cf.* "British Mining," chapters i—iii.

[34] *Cf.* Stephen's "Commentaries on the Laws of England," 10th edit., vol. iii, book v, chap. iv, sec. 7.

[35] The origin of the "royalties."

[36] This was abolished in 1838, *cf.* *Statistical Journal*, vol. ii, p. 268.

[37] The court and the district over which its jurisdiction extended received the appellation of "stannary," from "stannum" the Latin word for tin.

Elizabeth, and thus the tinners definitely secured both a court and a parliament.

They were divided into four districts, with the capital towns of Helston, Launceston, Lostwithiel, and Truro. In each of these districts a "steward" was appointed who held a court every three weeks and, together with a jury of six persons, tried and decided cases. From this court an appeal lay to the vice-warden of the Stannaries, who himself held a court every month and was chosen by the lord warden. From the decision of the vice-warden again appeal lay to the lord warden and thence to the earl, or, as he is now called, Duke of Cornwall.

The Parliament, which was legislative and executive, consisted of 24 "stannators." When any difficulty arose with regard to the interpretation of an old, or the enactment of a new, stannary custom, the lord warden, by command from the Duke of Cornwall or the Crown, issued precepts to the four towns of the stannary districts. Each town selected 6 members, and occasionally in cases of importance the assembled "stannators," who were gentlemen of property in the district, and 16 of whom constituted a binding majority, chose for each district 6 assistant-stannators who were connected with the practical working of the mines, and formed a lower house of assembly.

The meetings of this parliament were however very rare, and none is said to have taken place for a century or more. But the stannaries court has still its regular sittings. The separate courts of the different districts have been united into one; the jurisdiction of this court has been extended to the mines in Devonshire, which formerly had a distinctive court of their own, and to copper and other metals and non-metallic minerals found in the mines within the stannaries; and the procedure has been amended by the Stannaries Act of 1869, and by subsequent measures of the years 1873 and 1876.[38] The sittings of the court are held periodically[39] at Truro—usually in the months of February, May, August, and November—and last for two weeks; but the vice-warden also sits elsewhere in intermediate times to hear petitions for the "winding up" of companies. The court is chiefly employed[40] for arranging the calls made upon the "adventurers"—as the shareholders in the Cornish mines are styled—and for determining the liabilities of partnership under the so-called "cost-book"[41] system. But the ancient privilege by which all "tinners and "labourers" "in and about the stannaries," can claim during the time of their "working in the stannaries" to "sue and be "sued" in their own court "in all matters arising within the "stannaries," excepting "pleas of land, life and member," in order that they "may not be drawn from their business which is "highly profitable to the public" by attending their law suits in other courts, is by no means defunct; and a local newspaper of 26th November, 1885, contained a notice of an application made to the court by a Cornishman who had gone to America, which apparently was only refused because the jurisdiction of the vice-warden did not extend beyond the limits of the stannaries.[42] The militia again of the stannaries is not regulated by the general militia law but by a special enactment.[43]

---

[38] *Cf.* Bainbridge's "Law of Mines and Minerals," 4th edit., by A. Brown, 1878, chap. vi, sec. 2.

The court, which is described by a witness before a committee of the House of Commons in 1887 as the "cheapest court in England so far as its original "jurisdiction is concerned," has been supported by a tax of a farthing in the pound levied upon all ore actually sold arising in the stannaries, and by the sum of 1,000*l.* which has been annually remitted by the Prince of Wales as a contribution towards its expenses. On paper the appeal from the vice-warden still "lies "to the warden," who refers the question, as a matter of course, to "the Lords "Justices." (*Cf.* S., *Q.* 43, 45, 102, 107, 113, and 184.)

[39] S., *Q.* 4440.

[40] *Cf.* S., *Q.* 4720 and 4721.

---

[41] The system is said by a witness before a committee of the House of Commons in 1887 to have been in existence for a "very long series of years, certainly for "nearly 300 years." (*Cf.* Report on Stannaries Act (1869) Amendment Bill, 1887, *Q.* 4.) "Up to the Company's Act of 1862," he stated, "every Cornish "mine was conducted on this basis," and even now "all the great mines in Corn-"wall" are worked under the same peculiar system. It is true that since 1862 many mines have been based upon the "limited liability principle;" but a large number of these, it seems, "have been failures." (*Q.* 19.)

The essential features of the system are described by the same witness as consisting of:—

(1.) *The Monthly Principle.* All the accounts are to be "kept by the month," "everything is to be charged every month" in the "cost-book," and the adventurers themselves are to hold monthly meetings (*Q.* 4). This indeed may have been the origin of that monthly payment of wages to which we shall afterwards allude (*Q.* 13); and even now the "costs are regularly made up every month," although the actual meetings are generally held at intervals of three or four months (or sixteen weeks). This is done in order to meet the convenience of the adventurers, who have grown in number from eight to many multiples of that figure or more, and who, instead of living as they once did in the same parish, or county, or district as the mine, are "scattered all over England" (*Q.* 17). It should be added that the theoretical basis of the system is the principle of cash *versus* credit; that technically the cost-book companies should not borrow (*Q.* 4563), although as a matter of fact they are from time to time largely indebted to the bankers (*Q.* 4600); and that no capital should be advanced at the outset (*Q.* 161).

(2.) *The right to relinquish a share* at the end of a month on payment of all costs or calls due to date, and either to transfer the share to an outsider, or to compel the other adventurers to buy out the retiring adventurer's interest in the mine and its machinery (*Q.* 4, 8, 14, and 17). It has been suggested that the footing on which the interest should be valued should be, not as formerly, that of "a going" but that of a "selling" concern (*Q.* 71); and that the remaining adventurers should enjoy the option of winding up the mine within a limited period after the relinquishment. For they themselves may be non-resident, while a resident adventurer or adventurers may contrive to get out of the undertaking when they see that it is on the point of failure (*Q.* 72). The Stannaries Act of 1887 provides for these two objects.

[42] The court has a general equitable jurisdiction in all disputes. *Cf.* S., *Q.* 168 and 1049.

We have drawn attention to the history of the stannaries court, not only because it supplies perhaps the most striking evidence[44] of the antiquity of the mines, and of the distinctive local character which is connected with that antiquity; but also because the permanence of the jurisdiction of the vice-warden is some indication at least that the influences which are tending to lessen the isolation of the district may not be powerful enough to effect a complete change—though they may indeed produce alterations of detail—in the nature of the system under which the mines are worked, if it can be shown that that system rests on a basis of economic reason as well as of long tradition.

For there can be no doubt that within recent years there have been influences at work which must tend to lessen this isolation. The tranquillity—if we do not call it lethargy—which had before prevailed in the political sphere, has given way to an activity and enthusiasm accompanying the most embittered of contests; and it has been indisputably shown that the writer in the "Quarterly," from whom we have previously quoted, was not entirely mistaken when he remarked—in a different connection indeed than politics—that "never was a small people more curiously and readily divisible "into factions." For the contest between Whig and Radical in 1885 was even more intense and bitter than, we imagine, can have been that which was waged between[45] the partisans of the broad and narrow gauge. There have been too the signs[46] of an agitation among the miners which may not impossibly result in the formation of an union; and for some years a stream of emigration has been flowing from the district which must produce its results.

---

[43] *i.e.*, 42 Geo. III, cap. 72.

[44] Pryce speaks of "the privileges, immunities, and stannary laws whereby "they" (*i.e.*, the Cornish miners) "are distinguished, supported, and protected as "a separate body of people," p. ix. It must of course be allowed that *legal* institutions are peculiarly permanent.

[45] *Cf.* S., *Q.* 5815.

[46] *Cf.* "Western Morning News," 4th November, 1886. "Young Radical "miners are discussing the formation of a miners' union, but older and more "experienced men are not eager for it." *Cf.* also S., *Q.* 2293—97.

Some years ago indeed, when an agitation was fermenting on the question of the "four weeks' month"—as it is termed—an attempt was made in East Cornwall and Devonshire to form a miners' union. This was to bear the name of a Miners' Mutual Benefit Association, and to lay down rules providing, amongst other things, for the appointment of a committee of the men in every mine. To this committee reference might be made by any miner dissatisfied with the price offered by the captain for a particular piece of work. But even this association professed to exclude strikes from its programme, and was successfully met by the adventurers with a "lock-out" of "society men;" and thus both the dispute and the society came to a speedy end. (*Cf.* S., *Q.* 1092, and also "Cornish Telegraph," 21st February, and "West Briton," 2nd, 9th, 16th, 23rd, and 30th March, 1866.)

It is not too much to say that figures may be adduced which tend to show that between the census of 1871 and that of 1881 a third of the mining population of Cornwall left the county. The registrar-general states in his general report[47] on the census of 1881, that the population of Cornwall decreased by 8·9 per cent. during the previous decade, and that it is probable that the tin miners diminished by 34 per cent.;[48] and he notices the corroborative fact that during the same period the Board of Trade returns exhibit a concurrent decrease of 21 per cent. in the production of tin in the United Kingdom. A witness before the Royal Commission on the Housing of the Working Classes, spoke[49] to a similar effect of the "constant emigration" from the county; and a special correspondent of the "Daily News," who visited the "mining "division" in 1885, maintained[50] that it was "no exaggeration to "say that there" was "hardly a family in the locality some of the "members or intimates of which" were "not pushing their "fortunes in Australia or the New World." These emigrants, who apparently make the Canadian and American mines their chief destination,[51] are continually returning to take out their wives, their families, and their friends;[52] and indeed this is one of the most pleasing traits in the miner's character.[53] And hence it is that a journey to America appears to be scarcely more formidable than a journey to London, that letters from Cornishmen in America were published among the miners during the electoral contest of 1885, and that a paper[54] which circulates very extensively in the district may be fairly described as American in character.

As the result of these combined causes there is little doubt that new ideas unknown before are spreading amongst the miners, and

---

[47] *Cf.* "Census of England and Wales," 1881, vol. iv, General Report, pp. 9 and 48.

[48] *i.e.*, from 15543 to 10253.

The increase and decrease in the population of Cornwall for decennial periods since 1801 is given thus:—

TABLE A.

1801-11.	1811-21.	1821-31.	1831-41.	1841-51.	1851-61.	1861-71.	1871-81.
+ 14 p. cnt.	+ 18	+ 16	+ 13	+ 3	+ 8	− 2	− 9

[49] Report, *Q.* 8151.

[50] "Daily News," 21st September, 1885; and also "Leisure Hour," 1879, pp. 167, &c.

[51] Report, H. W. C., *Q.* 8152.

[52] Ibid., *Q.* 8158. "Daily News," 14th January, 1879.

[53] It must, however, be said that cases also occur where the poor law guardians discover that the emigrants have found it convenient to forget their families.

[54] *i.e.*, the "Redruth Independent."

that the foundation which may have existed for the system of wages we are going to examine in the isolation of the district, is being undermined. Were this then the only basis of the system we might expect to hear of its early disappearance. But the acceptance of this conclusion would imply acquiescence in a narrow and misleading view. The permanence of the system cannot be attributed to the isolation of the district alone, but must also be traced to another and perhaps more potent cause.

For although Cornwall seems, as far as can be ascertained, to be the birthplace of the system, yet it has been introduced—with some differences indeed—into other districts, and has there met with equal success, and shown promise of equal longevity. Mr. John Taylor, who is said to have been himself instrumental in promoting its introduction into Flintshire, Cardigan, Cumberland, Yorkshire, and Ireland,[55] described it in 1814 in a paper inserted in the "Transactions of the Geological Society"[56] as "the "peculiar system invented and gradually improved to its present "state in the mines of Cornwall, and more recently adopted in the "undertakings of the same kind in the adjoining county." But a royal commission which was appointed in 1864 to inquire "into "the condition of all mines to which the provisions of the Act "23 and 24 Vict., cap. 151, do not apply," found similar customs prevailing[57] so far away as the lead mines of the north; and in one of these places the system of wages was declared[58] to have been in operation for the previous half century. It is said[59] indeed by a witness before a committee of the House of Commons in 1887, "to have been almost universally adopted in all the mines which are worked upon lodes;" and we may accept this statement as approximately correct in view of the fact that the Spanish mines of Limares[60]—in common with mines in other parts of the globe—are apparently managed by Cornish captains.

Nor indeed is the emigration of Cornishmen an entirely modern phenomenon, for Mr. Wilkie Collins stated[61] in 1851 that "emigration had been more largely resorted to in that county than perhaps in any other in England;" and that out of the population of the Penzance Union alone nearly 5 per cent. left for Australia or New Zealand in 1849. The Quarterly Reviewer again in 1857 described[62] the Cornishman as "one of the most locomotive of mankind." "Emigration," he remarked, had "been so large of late years as to keep the population stationary, notwithstanding a flourishing state of domestic industry." About the year 1827, indeed, it is curious to note that an[63] actual foreshadowing of the present emigration to America occurred; for an article inserted in that year in the same "Review," and directed against speculation in Mexican and South American mines, shows how Cornish miners were taken across the ocean to work these mines, although, as the writer remarks, they were acquainted with copper and tin rather than silver.

---

[55] *Cf.* "Penny Magazine," 4th November, 1843. In the north apparently there is no public auction.

[56] "Geological Society's Transactions," vol. ii, sec. 14, 1814, p. 310.

[57] Report, *Q.* 13475—77, 13631, 13928, 14412, 14915—21, 14929, 15473, and 17374. The Yorkshire "bing tale" and "fathom tale" correspond respectively to the Cornish "tribute" and "tutwork." Appendix B vii, p. 322. S., *Q.* 246 and 247.

[58] *Cf.* Report, *Q.* 16195.

[59] S., *Q.* 217.

[60] S., *Q.* 295.

[61] "Rambles beyond Railways," p. 57. This efflux was apparently due to the potato blight. There was extensive emigration in 1867, owing to depression in the mining industry. *Cf.* "Mining Journal," 10th November, 1867; "West "Briton," 4th January, 1867.

But a more cogent argument for the permanence of the system may be found in the fact that during its recorded existence Cornish mining has passed through the most varied vicissitudes, and has, as we have noticed, at one time yielded copper and at another tin. Carew's suggestive language indeed might be applied to a large part of the history of Cornish mining. "But," he quaintly remarks, "you may not conceive that everie likelihood doth ever produce a certaintie, for divers have been hindered through bestowing charges in seeking and not finding, and many undone in finding, and not speeding whiles a faire show tempting them to much cost hath in the end fayled in substance, and made the adventurers bankrupts of their hope and purse." We are led then to seek for another cause for the permanence of the system, and that cause is to be found, as we shall endeavour to show, in the reasonableness and the efficacy of the system itself.

III.—*The Nature of the System.*

Some forty or fifty years ago descriptions[64] of the Cornish miner and his habits, and system of work and wages, were a familiar topic in the pages of such periodicals as Knight's "Penny Magazine." And even so late as 1861 a writer in the "Dublin

---

[62] "Quarterly Review," vol. cii, pp. 289—329.

[63] Ibid., vol. xxxvi, 1827, pp. 81—106.

[64] *Cf.* for description of the Cornish miner, the following accounts amongst others:—

(1.) "Geological Society's Transactions," vol. ii, 1814, sec. 14. (2.) "Quarterly Review," vol. xxxvi, 1827, pp. 81—106. (3.) "Penny Magazine," 27th December, 1834; 21st May, 1836; 4th November, 1843. (4.) *Statistical Journal*, vol. i, 1833, pp. 66, &c. (5.) "Economy of Machinery and Manufactures," by C. Babbage, 4th edit., 1835 and 1846, chap. xxvi, secs. 306 and 307. (6.) "Cornwall: its Mines and Miners" (Traveller's Library, vol. xxiii), 1855. (7.) "London Quarterly Review," vol. vi, 1856, pp. 436—85. (8.) "Dublin University Magazine," vol. lviii, July, 1861, pp. 32—45. (9.) "Deep Down in the Cornish Mines," by R. Ballantyne, pp. 354, &c. (14.) "Report of Mines Commission," 1864, pp. xxii and xxiii.

"University Magazine" declared[65] that the character and habits of the Cornish Miner "had been described times out of number." But of recent years the attention of the public has been drawn in other directions; and it may therefore be well to give a brief description of the system of work before we attempt to trace its history or to discuss its advantages and its drawbacks. The description will be more serviceable for our purpose if we select a period when the system had become—to use the phrase with some qualification—*stereotyped* in its main features. And, although this course may appear somewhat arbitrary, it will nevertheless bring our description into accord with the common account given in most of the authorities to which we shall have occasion to refer, and will also throw into the boldest relief the main characteristic features of the system itself.

The Cornish miner's year then is divided into different periods; and at the end of every such period a "setting-day," as it is called, occurs. Some time before this day the agents, or "captains," as they are termed, go through the mine and decide what work is to be done in the succeeding period. They determine for instance on the one hand the work which must be executed, not directly for the purpose of obtaining the ore, but indirectly with the object of preparing the way. They decide what "shafts" must be sunk, what "levels"[66] must be "driven,"[67] and what "winzes"[68] must be made. And this work of preparation is continually going on, for a mine is not held to be prospering unless it is being "opened "out" in this way. On the other hand they determine how many "pitches,"[69] or divisions of the lode, are to be worked or "stoped." They estimate the quantity and the quality of the ore which these pitches are likely to yield, and the amount of labour which must be devoted to the work. And in a similar way they decide upon the amount of labour which can be done in a given time in the work of preparing the way for the extraction of the ore, and determine, for example, the quality of the ground through which the shafts or winzes are to be sunk, or the levels driven.

On the setting-day the men employed in the mine, together with those who have come from other places desirous of work, assemble round the "account-house," or it may be a platform, where the chief agent or "captain"[70] takes his stand. The proceedings begin with the reading of the rules and conditions under which the work of the mine is conducted; and these "rules" are termed the "general article."[71] Then follows a public auction or "survey" as it is called. The captain states that a certain amount of work is to be done in some part of the mine for the purpose of preparing the way, that a "shaft," for instance, is to be "sunk," or a "level driven." He says that part of this work was let to (say) John Thomas and his "pare" for the previous period at so many shillings a lineal or cubic fathom; and he asks if John Thomas is willing to take the work on these terms for the succeeding period. John Thomas, who is called a "taker," and who represents a body of two to eight men or boys, who work together and constitute a "pare" or "pair," as it is somewhat inconsistently styled,[72] perhaps replies that he is willing to accept the proffered terms. The captain then inquires whether anyone will do the work for less; and, so to say, puts it up to auction; and the bidding proceeds downwards according to the practice pursued in a "Dutch" auction. If no one is willing to take it for less, the work is "knocked down" to John Thomas; but, if anyone is willing, it is given to the lowest bidder. The bidding is closed, not by the auctioneer's hammer, but by a pebble; this is thrown into the air by the captain, and bids may be made before it reaches the ground; but when once it has done so, the last bidder is considered to have secured the bid. The bidding however is seldom carried to so low a point as the captain considers to be a fair equivalent for the work, and consequently the auction merely determines the order of option. For the captain generally declares that he has a "reserve price," and thinks that the work can be done for less than has been offered; and he proceeds to ask John Thomas, or the man who has obtained the priority of option, whether he is willing to accept these lower terms. Should he accept, the bargain is concluded; and should he not, it is offered to the man to whom the auction assigned the second choice; and so on until some one is found to be willing; or, should this not be the case, the letting of this part of the work is postponed until the next "setting-day." Should however the bargain be concluded, the men go to work. They are charged for all the materials they

---

[65] *Cf.* article quoted above (8).

[66] A "level" = a horizontal gallery at right angles to the shafts.

[67] Driven = made.

[68] A "winze" = a shaft sunk from one level to another for purposes of ventilation.

[69] A "pitch" is a division or compartment marked out in the lode, the ore contained within which may be extracted by one body of miners.

[70] There is usually more than one "captain" in a Cornish mine; for instance,

---

there are "underground captains," and there are "grass captains," who superintend the work of "dressing" the ore, &c., on the surface, and there is the "chief "captain." The title may perhaps have been taken from the mines in Saxony, where military discipline and uniform prevailed, for Queen Elizabeth is said to have introduced a number of German miners into England about 1570, to inspire and instruct the British miners. *Cf.* Hunt's "British Mining," S., *Q.* 268, and Dr. C. Le Neve Foster's evidence, given in 1879, before the Accidents in Mines Commission (*cf.* Preliminary Report, 1881, *Q.* 4099 and 4243).

[71] This is not always read now.

[72] A local term, *cf.* below, note 150.

use, whether in the shape of tools, of candles, or powder, &c., and for the cost of hauling the rubbish to the surface. At the end of the period for which the contract is let a balance sheet is prepared; they are credited with the amount of work they have done, and debited with its cost, and frequently also with a subscription for medical attendance,[73] and for the maintenance of a club,[74] which supplies them or their families with help in case they may have sustained "visible hurts."

The Royal Commission of 1864 stated that "considerable "deductions"[75] were made in this way from the "nominal "earnings" of the men, and to illustrate this by an actual example, we may select a case recorded[76] in a book entitled "Cornwall, its "Mines and Miners." The instance is taken from the "bal-bills," as the paying-bills are termed,[77] of the Devon Great Consols Mine, which was at one time one of the most prosperous enterprises in the mining district. It dates back to the year 1849, and to the month of November:—

TABLE I.

Six men contracted to do as much work as they could during a month in driving and excavating a level, 7 feet high by 7 feet wide, at 7*l.* per fathom.

	£	*s.*	*d.*
During the month 3 fathoms 3 feet and 4 inches were done, and therefore the amount due to them for this =	24	17	9

On the other hand they were debited—

	£	*s.*	*d.*			
To 48 lbs. candles	1	12	–			
" 50 lbs. powder	1	13	4			
" safety-fusee	–	6	–			
" hilts	–	–	3			
" can	–	2	6			
" smith's costs	2	6	10			
" drawing to surface	1	15	6			
" doctor and sick	–	9	–			
Total	8	5	5			
				8	5	5
And therefore they were entitled to receive the balance, or				16	12	4

or 2*l.* 16*s.* odd each on the next "setting-day."

---

[73] The Mines Commission (1864) alludes to dissatisfaction felt by the men because the doctor was chosen by the adventurers. (Report, p. xxiv.) He now seems in some cases to be chosen by the men. S., *Q.* 1049, 1730, and 1943.

[74] The club payment varied (1864) from 6*d.* to 9*d.* per head per month. (K., p. xxiv.) These clubs, it must be remembered, "provide against accidents, and in "some cases provide burial expenses;" but they "do not give maintenance in case "of sickness or old age, and often are unable to provide against permanent dis-"ablement." *Cf.* S., *Q.* 5249—51 and p. 14.

[75] These deductions are of course taken into consideration when the contracts are made. (K., p. xxiv; S., *Q.* 37, 339, 523, and 1428.)

[76] P. 147.

[77] S., *Q.* 764.

Sometimes these "tut-workers," as they are called, from the German "todt," or dead, are credited in addition with small percentages of the ore that may be extracted in the course of their excavations,[78] in order to induce them to keep it as separate as possible from the rubbish or "deads;" and during the progress of the work they sometimes receive payments on account.

So far then for the work of preparing the way: we have next to consider the actual work of excavation. In this case the work to be done is divided into several compartments or "pitches," and is in a similar manner put up to auction, save that here the men offer to do the work on consideration of receiving a certain percentage of the price realised for the ore, and of paying all, or nearly all,[79] the cost incurred before it is reduced to a saleable state.

Thus, to take an example of "tribute," as this method is termed, from the same mine for the months of August and September—[80]

TABLE II.

	£	*s.*	*d.*
We find that the men are credited with	68	5	9

which is the amount due to them at 7*s.* 6*d.* in the £ on 182*l.* 2*s.* 2*d.* realised by the ore.

They are debited on the other hand with—

	£	*s.*	*d.*	£	*s.*	*d.*
Candles (108 lbs.)	3	12	–			
Powder (195 lbs.)	6	10	–			
Safety-fusee	1	9	–			
Hilts	–	1	9			
Cans	–	2	6			
Saws	–	6	–			
Locks	–	1	6			
Smith's costs	3	19	6			
Drawing	3	–	11			
Dressing	6	10	8			
Use of grinder	–	8	10			
Sampling and weighing	–	17	6			
Subsist or money drawn	36	18	–			
Total	63	18	2			
				63	18	2
And therefore they have to receive a balance only of........				4	7	7

They obtain, as will be noticed, a certain sum on account[81] to support them until the balance is handed over, and this sum is termed "subsist" or "cist;" and they can relinquish the "pitch," on paying a fine of 20*s.* a man, should it prove irretrievably bad.[82]

---

[78] S., *Q.* 248 and 1281, *contra* 1602.

[79] Tramming is done sometimes at the expense of the men, sometimes at that of the adventurers (S., *Q.* 4069—71).

[80] The contracts were then let for periods of two months.

[81] Some accounts state that the ores were sold every week, and that the miners at once received their "tribute;" but perhaps it was only the case that they were at once credited with it.

Such then is a brief description of the system of wages in the Cornish mines, as it existed at one time, and as it is still constituted in its main features, although, as we shall see, it has undergone changes of detail.

IV.—*The Origin of the System.*

The origin of the system, and, in particular, of that part of it which is most distinctive in character, and which Babbage described[83] as especially good, is buried in obscurity; but it seems to have certainly been in existence at as early a date as the middle of the last century.

For a Frenchman,[84] a M. Jars by name, who travelled and made observations in England in 1758, 1765, and 1769, expressly describes a similar system as prevailing in Cornwall at that time. His observations were collected and published at Paris under the title of "Voyages Metallurgiques," and a copy of the book is contained in the British Museum. In the third volume, which was published in 1781, he alludes to the Cornish mines. In the fifth section of the "Troisième Mémoire" he says that the neighbourhood of Redruth abounded in copper mines; and in the seventh section of the "Septième Mémoire" he describes Cornwall in eulogistic terms as "cette province renommée depuis les tems les plus réculés par "ses mines d'étain qu'elle fournit à toute l'Europe, et qui l'est "aujourd'hui" (*i.e.*, 1765) "presqu' autant par celles de cuivre."[85]

And then in the tenth section he proceeds to give an account of the way in which the tin mines are worked. "L'usage établi," he remarks, "dans toutes les mines, est de donner l'extraction du "minerai par entreprise; les entrepreneurs ont des ouvriers à "leur gages qui travaillent sous leurs ordres; quelques-uns sont "ouvriers eux-mêmes."[86] On a day which has been previously fixed those who are interested in a mine (*i.e.*, the adventurers), or their agents, assemble; and the contractors ("les entrepreneurs") make offers, bidding downwards ("en rabais," *i.e.*, by "Dutch" auction). The extent of each bargain is called a "pitch," and is usually 15, 20, or 24 fathoms of "level" (*i.e.*, the distance of one "winze" from another), and 7 fathoms in depth. The number of workmen who are to do the work is fixed at seven, for example, or eight, or nine. The time of the contract is always ("toujours") four months. The workmen find themselves the necessary tools ("outils"), light, and powder. The "interested" have only to provide for the maintenance of the machines and the ropes; but they must bring the mineral to grass ("jour"), even dressed for sale. The contract is determined by a portion of the mineral extracted, *i.e.*, the contractors receive a third, a fourth, or a fifth of the value raised; and in the tin mines they always receive their share in ore, but in the copper mines in cash. Hence the "entrepreneurs" run risks, and have to judge by appearances. But not so the adventurers; and on this account the contractors can work for four months without interruption in the contract, but can also abandon the bargain after the first month, on the payment of 1*l.* for each person.

---

[82] The dressing of the ores on the surface, or their preparation for the smelter, was at one time done chiefly by tribute or at least by contract; more recently it seems to have been executed to a great extent for daily wages, but some work is still done by contract with the tributer. S., *Q.* 1775 and 1776. *Cf.* "Penny "Magazine," 27th December, 1843; *Statistical Journal*, vol. i, p. 73; and S., *Q.* 440 and 439.

[83] "Economy of Machinery," &c., sec. 306.

[84] Sir Charles Lemon pointed out this fact in his article in the *Statistical Journal*, vol. i, p. 74.

[85] "This province, celebrated from the most remote time for the mines of tin "with which it supplied all Europe, and almost equally renowned to-day for its "copper mines."

[86] "The established practice in all the mines is to grant the privilege of extract"ing the mineral by contract; the contractors (or undertakers) have workmen in "their pay who work under their orders; some are themselves workmen."

Here then we have the main outlines, together with some of the details, of the system we before described. It seems, if we may trust the minute particulars of M. Jars' account, to be in a state of transition. The actual workmen appear for the most part to be hired for wages, and to be under contractors who agree to excavate the ore for a certain percentage of the selling price. And it is to be noticed that, although the "entrepreneurs" are said elsewhere by M. Jars to be compelled to have workmen *of all kinds*, yet no express mention is made by him of the work to be done in preparation for the extraction of the ore, but only of the work of actual extraction. Now it will be remembered that the work of extraction, according to the description that we have previously given, was assigned to the tributers, and the work of preparation to the tut-workmen. But, as we shall subsequently notice, it is the tut-workmen who approximate more closely to ordinary wage-earners, and it is the "tributers" who are further removed from that position. And yet M. Jars, confining his attention apparently to the work of extraction, speaks of the actual workmen as hired for wages.

But he also states that the "entrepreneurs" are in some instances actual workmen; and in another passage he remarks that simple workmen often commence the "exploitation" of a mine at their own risk. If the mine promises well, but the cost of extraction is great, they can dispose of their interests in it to others who frequently advance them subsistence; and then, should the venture finally prove unsuccessful, they will go and work for wages in another mine in order to repay these advances. It is interesting to find that Pryce in his "Mineralogia Cornubiensis," which was published by subscription in 1778, uses language which tends to corroborate this account of M. Jars; and Pryce, we must remember, was an actual resident in the mining district. He states[87] that "shallow mines are sometimes occupied by "labouring miners;" and—what is even more important—he alludes to a custom which was sometimes adopted of setting or leasing a whole mine on *tribute.*[88] Some miner, he remarks, who may have several persons associated with him in the enterprise, takes a mine of the adventurers for a period of half a year, a year, or two years. If the mine yields tin, he pays the lord the share of the produce to which he is entitled, and hands over to the adventurers a half or a quarter of the remainder. If the mine on the other hand produces copper, he does not apparently pay the lord himself, but he does bear the sole expense of digging, of raising, and of dressing all the ore that is merchantable.

It may be then that M. Jars has confused the details of the system; and this is not impossible in the case of the observations of a foreigner. But on the whole it appears more probable from an examination of his writings that he was a careful observer, and that he would have exercised special care in recording a practice, the unique character of which evidently produced a strong and abiding impression on his mind.

If then we adopt the latter conclusion, it is hardly fanciful to suppose that the system had been a long time in existence, and that it was now undergoing a transition—that the workmen were beginning to oust the "middlemen," and enter on the contracts themselves. This hypothesis derives support from the account given by Pryce, for at the time when he wrote the transition had apparently reached a further stage. For the modern system of "tribute" in wages was in full vigour in his time as well as that system of leasing a mine as a whole which we have just noticed. That system indeed may well have proved the stepping stone from the old order to the new—from the method of tribute as it is described by M. Jars to the method of tribute as it is found in more modern times.

It is too to be noticed that M. Jars' own language seems to refer to a custom which was by no means novel, but had on the contrary been established so long that its main features might almost be said to be stereotyped. And from the general character of his description we can infer at once the probability of a still earlier date for the introduction of the custom, and the likelihood of the survival of its main features to a time subsequent to alterations in its minor details. For even at the period when he wrote the title of captain was apparently in existence, and was applied to the first master miner, who then as now had subordinates under him, and who received a fixed salary every month together with a certain share in the proceeds of the mine. Reference is also made, as we might expect, to the laws of the stannaries; and—what is more remarkable—it appears that the sale of the copper ores was even then conducted according to a practice named "ticketing," which has been a marked characteristic[89] of Cornish mining during a large part of its history.

---

[87] P. 174.

[88] P. 178, and also "British Mining," p. 107. The Mines Commission (1864) found that some of the mines in Wales were worked by workmen-adventurers, p. xxxiv. These sets were called "Poor Men's Ventures."

According to this practice samples of the ores to be sold were sent before the day of the sale to the various smelters, and were taken by them to the assayers, who were men of practical experience rather than of scientific acquisitions. Having obtained the reports of these assayers, the representatives of the smelters determined upon the price they were respectively willing to give for the ores; and on the appointed day they met at Redruth or some other centre, put down the price on a ticket and handed it to the chairman of the meeting, who was generally the agent of the company selling the largest amount of ore. The prices offered for the different ores by the different smelters were arranged in tabular form, and the chairman drew a line under the highest offer; and with this process the bargain was concluded. This practice of ticketing has been recently revived in the sales of tin, and its revival has excited considerable local discussion, as it seems to be the result of a temporary rupture in a combination or quasi-combination which appears to have previously existed among the smelters.[90] But the practice does not seem to have been common

---

[89] *Cf.* "Quarterly Review," vol. xxxvi. Mr. John Taylor indeed in the "Geological Transactions" says that in his time the sales of the *tin* were "not "very well" conducted; although the copper was sold by "ticketing;" and M. Jars similarly maintains that the tin was sold in his day by a bargain between the tinner and the smelter. But the Quarterly Reviewer applies his description, it would seem, equally to copper *and tin*. *Cf.* also "De la Richesse Minérale," by M. de Villefosse, tome i, p. 296.

[90] *Cf.* "Western Morning News," 1st and 31st December, 1886. The small number of the smelters tends to create combination. It is curious that the copper ore has been taken to Swansea to the coal to be smelted, while the coal has been brought to Cornwall to smelt the tin. Partly this has been due to the cost of transit in its relation to the comparative quantity of coal used in smelting the two metals, and partly to the regulation of the stannary laws.

Cf. Mr. Frecheville, H.M.'s Inspector, remarks in the "Mineral Statistics" (1884), that "the amount paid by the smelter per cent. of metal contained in the "ore is calculated from the results of a dry assay after deduction of 1¼ from the in the sales of tin, although the recent revival is not without a precedent.[91] In the sales of copper however the observation of the practice appears to have been almost, if not entirely, without breach or infringement; and therefore the fact that it is mentioned by M. Jars tends to prove that he was describing a system, the main features of which had been, as we have stated already, stereotyped by traditional usage.

It is then possible, and even probable, that the introduction of the system was considerably anterior to the time at which M. Jars wrote; and indeed it may be the case that it was in existence in a rudimentary form in the reign of Queen Elizabeth. At any rate the statement contained in a manuscript book of that reign, which was written by a "bailiff of Blackmore," and is quoted[92] by Sir Charles Lemon, is by no means irreconcilable with this hypothesis. The passage runs thus: "The most part of the " workers of the black tyn and spaliers are very poor men, and " no doubt that occupation can never make them rich; and chiefly " such tyn-workers as *have no bargain*, but only trust to their " wages, altho' they have never so rich a tyn-worke, for they " have no profit of their tyn, if they be hired men, saving only " their wages, for their masters have their tyn. Now if they " should chance to be *farmers*[93] themselves, and their worke fall " bad, then run they most chiefly in their masters' debts, and " likely to incur more and more, rather than to requite any part " thereof; for of these two choyses, *to be a hired man or a* "*farmer*—the one is a certaintie, and the other an uncertaintie.[94] " The farmer knoweth not how his worke will doe, until tyme " that he have proved it, and must needs live in hope all the yere, " which for the most part deceiveth him (as the saying is) 'Qui " spe vivit nunquam agit vitam . . .' yet this much, I confess, " of the wealthiest of tynners, which happily worke together in " one tyn-worke with the poore man, they are very charitable and " merciful towards their fellow-workers."

Carew[95] again, who wrote at the end of the sixteenth century, states that "the partners may be either such tinners as work on " their own behoof, or such adventurers as put in hired labourers,"

"product per 20 (*i.e.*, 6¼ per cent.) for 'returning' charges." By an old trade-custom there is also a deduction on the weight of a parcel of tin ore of 3 lbs. per cwt.

[91] S., *Q.* 1418.

[92] *Statistical Journal*, vol. i, p. 71. The italics are mine.

[93] Farmer = entrepreneur.

[94] A curious anticipation of the main disadvantage of tribute. *Cf. infra.*

[95] Carew, it must be said, seems to be not unfairly described by the Quarterly Reviewer (vol. cii) as a "gentlemanly amateur, rather than a painstaking observer " or antiquary." His book was published in 1602.

"and that "the hirelings stand at a certain wages," "either by "the day" or "for the year," "as their deserving can drive the "bargain."

From the character of these passages, it is clear that any inference which is drawn must necessarily be of a hypothetical nature. But the hypothesis that the system had been introduced at an earlier date than that at which M. Jars conducted his inquiries, and that he wrote his description at a time when it was in a transitional state, and the taking of the contracts was passing from the "entrepreneurs" to the workmen themselves—who even previously had sometimes entered into a bargain and worked a mine on their own account—is at least not at variance with the facts we have noticed.

A witness indeed before a committee of the House of Commons in 1887, maintained[96] that "Cornish mining is of such a kind that "it is impossible to estimate the work done by the miners by "time;" and that therefore "from the first beginning of Cornish "mining, up to the present moment, it has been necessary to pay "by results;" and another witness declared[97] in similar language "that "tribute has been in use" "for centuries" in Cornwall.

Whether the system of tutwork was in existence or not at the time when M. Jars wrote, or at a previous period, it is not possible to say, but it may be the case that the work of preparation was done entirely by "hirelings," and the taking of the contracts may have applied to the excavation of the ore alone. It may be that by a natural analogy it was afterwards extended to the work of preparation, save only that in this latter case where previous precedents may have been in favour of definite wages, and where the quantity, rather than the quality, of the work was the more important, the *ad valorem* arrangement of tribute was not adopted.

V.—*Its Subsequent History.*

But, hypothetical as the theories we have just put forward must necessarily be, we are on surer ground when we attempt to trace the history of the system from the time of M. Jars onwards. In 1827, when the article in the "Quarterly,"[98] to which we have previously referred, was written, the system had apparently assumed its modern shape, and tutwork and tribute were both found. The pitches at this time however seem to have been generally let for periods of two months, and to have been usually apportioned to two or four men.[99] In the "Penny "Magazine" of 27th December, 1834, the familiar description of the system is similarly given, and here again we find that the contracts are stated to have been made for periods of two months. In the same magazine, in the year 1836, the system is described in identical general terms; but it is also mentioned that the pitches, which were let at one time for periods of six months, were now let from month to month, and the writer characterises this change as being "greatly to the permanent advantage" of the miners, because "greater certainty" of subsistence has been thereby introduced. Sir Charles Lemon, in 1838, in an article in the *Statistical Journal,*[100] adheres to the same general description, following the account given by Mr. John Taylor in a lecture delivered before the Society of Arts, in March, 1837; and Mr. Laing, in 1842, in the "Atlas Prize Essay," on National Distress,[101] does not make any departure from the ordinary contemporaneous account, beyond the statement that even then the contracts were still "generally" put up for two months. Mr. Babbage, in the fourth edition of the "Economy of Machinery and Manufactures," which was published in 1846, bestows[102] high commendation upon the system, and says that tribute is applied to the raising and dressing of ores, and consists of a certain part of the value of the product when it has been rendered saleable; and that tutwork is the name given to contracts for sinking shafts, for driving levels, and for making excavations at a certain price for the fathom in depth or length, or the cubic fathom. Both in tutwork and tribute, he remarks, the work is offered at public auction. The descriptive book entitled "Cornwall: its Mines and Miners," and published in 1855, gives an elaborate detailed account, but is in accord with the prevailing description. So are the writers in the "London Quarterly" of 1856, and the "Dublin University Magazine" of 1861; and so also is Mr. Ballantyne in his book, "Deep Down in the Cornish "Mines." The familiar description once more is given in the report of the Mines Commission of 1864, over which Lord Kinnaird presided. "There are two classes of workers," the Commissioners state,[103] "called tut-workers and tributers. The former contract "at so much a fathom to drive the levels, sink shafts, and put in "rises and winzes. The latter neither drive nor sink, but are "employed in getting out the ore from the levels, ventilated and "partially explored by the tut-workmen, and they are paid so much "in the pound on the market value of the ore, which they bring to "the surface, when sold."

---

[96] S., Q. 30. *Cf.* Q. 211.

[97] S., Q. 1475.

[98] Vol. xxxvi.

[99] *Cf.* Report of Mines Commission, Q. 1864, one man and one boy.

But we have yet to notice an important variation from these different accounts. We may refer, for example, to a manual entitled the "Principles of Metal Mining," which forms part of

---

[100] Vol. i, pp. 66, &c.

[101] Written in 1842 and published in 1844.

[102] (And 1835) sec. 307.

[103] P. xix.

"Collins' Elementary Scientific Series," and is written by a Mr. J. H. Collins, at one time honorary secretary to the Miners' Association of Cornwall and Devon. This book, which bears the date of 1875, states indeed that shafts are sunk and levels driven at tutwork, *i.e.*, a fixed rate per lineal fathom, that the "takes" are mostly for one or two months, and that the excavated material is sometimes drawn to the surface at the expense of the miner, and sometimes at the expense of the adventurers, and deductions are made from the gross earnings of the men for the cost of materials, &c. But the ore itself, the writer remarks, is excavated or "stoped,"[104] *sometimes by tutwork,*[105] *i.e.*, a fixed rate per ton, though it is indeed *very often* done by tribute (or a certain proportion of the value), the tributers engaging merely to break the ore, or to pay all the charges incurred until it is ready for sale. The significant remark is appended that tributing has "gone a "good deal out of use of late."

In a similar way Dr. C. Le Neve Foster, who was the first inspector appointed for Cornwall under the Metalliferous Mines Regulation Act, writing in 1883, in the ninth edition of the "Encyclopædia Britannica," adheres in some respects to the ordinary account, but also gives indications of the important change we have just noticed. He says that the driving of levels and the sinking of shafts are generally executed at a certain price per running yard or fathom, that the agents take care that the excavation is of the proper dimensions and in the right direction, and that at the end of a fixed period the work is measured and the cost of the materials which have been supplied (*e.g.*, explosives, steel, candles, &c.) deducted from the gross earnings. He also alludes to the system of tribute, which he suggestively describes as a speculation on the value of the ore in a certain area or pitch: and he says that this tribute consists of a payment given on all the ore extracted—a payment of a certain proportion of the value after the cost of breaking it, of hauling it, and of dressing, has been defrayed. But, like Mr. Collins, he adds that the mineral is sometimes extracted at so much per cubic yard or fathom excavated or so much per ton of mineral obtained.

These statements again are in general agreement with the evidence given before Lord Kinnaird's commission; and it is very instructive to find, at a still earlier date, indications of such a variation, at least in a rudimentary form. The "Mining Journal," for instance, of 3rd September, 1836, states that "latterly in some "mines the contrary practice" (to setting pitches on tribute)

---

[104] "Stope" = the term for removing the ground by steps or layers, either downwards or upwards.

[105] The italics are my own.

"has prevailed," and the "lode is stoped at so much per fathom," although indeed it adds that the practice is an innovation chiefly found in the mines worked by London companies. In an issue of the same paper on the 2nd of January in the same year we do, as a matter of fact, find an agent of one of the mines reporting that he is "trying" a "copper lode on tutwork;" and we may perhaps go back further even than this. Mr. John Taylor in 1814 describes tutwork as work which is done by measure, and used in sinking shafts, in driving levels, or in *stoping* ("*stoaping*") *ground.*[106] And Pryce still earlier,[107] after mentioning[108] both tutwork and tribute, remarks[109] that in some mines the adventurers set the tin and the copper "to break by the fathom," because, he significantly adds—and we shall see the bearing of this remark later—the tributers fail to observe their agreements. In another passage,[110] however, he speaks of the "stoping" of *dead* ground by tutwork; and it is perhaps this practice to which reference is made by Mr. Taylor—though not indeed by Pryce himself—in the remarks we have just quoted.

The evidence given before Lord Kinnaird's commission tends, as we have said, to corroborate these statements. "We are breaking "ore by tutwork," "we raise our ore principally by tutwork," remarks[111] one witness. Another declares[112] that the mine must be a very good mine "where the majority are tributers;" and the general tenour of the evidence shows that poor mines are often worked chiefly by tutwork. It is indeed alleged[113] that it is precisely this difference between the yield of the mine which produces the prevalence, as the case may be, of tutwork or tribute, for it "all depends," argues[114] the witness to whom we have just referred, "on the productiveness of the mine." Another maintains,[115] on the contrary, that the question turns in a large measure on the way in which the men themselves have been "brought up;" for tributers do not like to work on tutwork, and the tut-workers experience a difficulty in working on tribute. But, whatever be the true reason, there is no doubt, according to the evidence furnished to the commissioners, that different mines exhibit great variations in this respect. In one place the majority of the men appear[116] to be tut-workers, in another[117] there are more tributers; in a third[118] the men are chiefly tributers, in a fourth there are no men on tutwork; in yet another[119] there are no tributers, and in another[120] the number of men employed respectively under the two systems is about the same.

---

[106] The italics are my own.
[107] *i.e.*, in 1778.
[108] P. 175.
[109] P. 192.
[110] P. 180.
[111] *Cf.* Report, *Q.* 1165, 7487 and 7488.
[112] *Q.* 3470.
[113] *Q.* 3468.
[114] *Q.* 3468.
[115] *Q.* 5046.
[116] *Q.* 7486 and 10349. This last answer refers to Cornwall generally.
[117] *Q.* 11245.
[118] *Q.* 6146 and 11451.

On the whole the balance of evidence seems to show that at the time of the commission the amount of work let upon tribute was decreasing; and the commissioners themselves state[121] in their report that "in the event of a rich lode being discovered it is "frequently worked by tutwork." A significant reason for this change—to which we shall have to draw more attention later—is supplied[122] by one witness. In consequence of the "starts"[123] he maintains, "the mine agents have become more cautious, and they "set the men to stope, instead of tribute."

In the case indeed of the Dolcoath Mine, which is now the most prosperous mine in Cornwall, a "captain" states[124] before the commission that in the course of the month the agents "set out "all the stopes for the mine at so much per ton for what is fit to "stamp when it is brought to the surface." And these men who receive a certain price per ton he characterises as a "kind of "tributers." They seem indeed, if we may say so, to constitute an intermediate stage between ordinary tutwork and ordinary tribute. "They depend," it is true, as the same witness remarks, "quite upon their own resources," for they are only paid for the saleable ore that is sent to the surface, and the pitch may not impossibly turn out worse, though it may indeed also turn out better, than the captains or the men anticipated at the time of the "survey." But, on the other hand, we must not forget Mr. John Taylor's[125] declaration, when he says that the ordinary Cornish custom of tribute was superior to that in other mining districts, and that the Derbyshire practice by which the men raised the ore at "cape" (or a certain price per ton) approximated indeed to the Cornish custom, but fell "very short" of it. These "kind" of tributers in fact seem to speculate on the yield of the lode in quantity more than in quality, and therefore on the one hand they resemble tut-workers inasmuch as they are paid merely for quantity, and on the other they resemble tributers because they speculate also to some extent on the yield of the lode.[126]

This last piece of evidence then is of no little significance, and tends to confirm the statement of Mr. Collins and Dr. Foster; and it is strengthened by the examples of the pay sheets given in an appendix[127] to the commissioners' report.

---

[119] *Q*. 1396.

[120] *Q*. 3469.

[121] P. xxiii.

[122] *Q*. 10351.

[123] A "start," a piece of unexpected good fortune in the yield of a lode.

[124] *Q*. 8735.

[125] *Cf*. "Geological Society's Transactions," vol. ii, p. 317.

[126] *Cf*. below, sec. ix.

[127] Appendix, B xii, pp. 445 and 446.

TABLE III.

Thus a "bal-bill" at Carn Brea supplies an example of the ordinary system of tutwork:—

May, 1863. *Paid 3rd day of July*, 1863.

—— and Co. (four men).

	£	s.	d.	£	s.	d.
1 fathom – feet 7 inches at 12*l*. a fathom				13	3	4
1 „ – „ – „ 13*l*. „				13	–	–
Assisting shaftmen				1	15	–
				27	18	4
Sundry deductions—						
To candles	1	19	4			
„ powder	1	13	4			
„ safety-fuse	–	6	–			
„ sundries	–	1	–			
„ smith cost	1	5	5			
„ drawing	–	6	3			
„ tramming	–	–	–			
„ doctor and club	–	6	–			
				5	17	4
				22	1	–
Barber's deduction				–	3	–
				21	18	–

TABLE IV.

And a "bal-bill" at Wheal Basset similarly supplies an example of the ordinary system of tribute:—

For October, 1863, *and Paid 27th November*, 1863.

—— and partner (two men).

	£	s.	d.	£	s.	d.
By 20*l*. 18*s*. 6*d*. at 7*s*. in £				7	16	11
To overcharged on Tribute	–	3	4			
„ 18 lbs. candles	–	12	–			
„ powder	–	–	–			
„ fuse, hilts, clay, 6*d*.	–	–	6			
„ cans, shovels, spades	–	–	–			
„ dressing	–	12	–			
„ mixing and samples	–	7	4			
„ smith cost	–	3	6			
„ drawing	–	12	–			
„ subsist	–	–	–			
				2	10	8
				5	6	3
Doctor, club, and barber				–	2	6
Balance				5	3	9

Table V.

But at Dolcoath we get indeed the following "bal-bill" of tribute:—

28th November, 1863.

—— and partners (four men).

	£	s.	d.	£	s.	d.	£	s.	d.
Amount—tin							3	11	8
„ tut							–	12	3
							4	3	11
Mixing and dividing	–	–	–						
Grinding	–	2	3						
Box and drawing	–	13	11						
Smith's costs	–	8	6						
Candles and materials	–	19	5						
Powder	–	8	6						
				2	12	7			
Doctor				–	2	–			
							2	14	7
							1	9	4
Subsist							1	–	–
							–	9	4

But we also find the following "bal-bills" for tutwork at the same mine:—

Table VI.

Nov., 1863. *Paid 26th Dec.*

—— and partners (six men).

	£	s.	d.	£	s.	d.
Driving 26 fathoms at 14s.				19	16	8
Tin-stuff, 25 tons 4 cwt., at 7s.				8	16	4
				28	13	–
Box and drawing	–	16	4			
Smith's costs	1	11	11			
Candles and materials	2	6	–			
Powder	2	–	–			
				6	14	3
				21	18	9
Doctor				–	3	–
				21	15	9
Club 4/6, and barber 1/6				–	6	–
				21	9	9
Subsist				–	–	–

Table VII.

Nov., 1863. *Paid 26th Dec.*, 1863.

—— and partners (six men).

	£	s.	d.	£	s.	d.
Tin-stuff, 198 tons 9 cwt. 6 qrs.				59	10	8
Deduct charge last month				18	–	–
				41	10	8
Assisting timberman				1	4	3
				42	14	11
Box and drawing	3	16	11			
Smith's costs	4	11	1			
Candles and materials	6	1	2			
Powder	4	15	2			
				19	4	4
				23	10	7
Doctor				–	3	–
				23	7	7
Club 4/6, and barber 1/6				–	6	–
				23	1	7
Subsist				–	–	–

Before a committee of the House of Commons,[128] in 1887, evidence to a similar general effect was given. Sir (then Mr.) Warington Smyth stated, for example, on the one hand[129] that where the ore is "disseminated throughout the width of the vein," or the "vein is very distinctly and sharply divided from the "country (*i.e.*, the surrounding ground) "by a band" "of soft "clay," "the whole of the material may have to be sent up," and "it may be advisable to work the whole vein out by tutwork." On the other hand he declared[130] that "in many mines it may be "principally by means of the tributers that the ore is raised," and that this system "will be particularly introduced where the lode is "irregular, or there is a great deal of 'deads' to be left behind." Another witness affirmed[131] that "in many cases the tributer is "done away with," especially in East Cornwall,[132] and that "as a "rule" the lode would now be set on tutwork if it was known to be uniformly good.[133] But Captain Josiah Thomas, the manager of Dolcoath, maintained,[134] on the contrary, that tributing could not be abolished without injury to the men and the mine alike—to the men, because they would be deprived of the opportunity of increasing their earnings—to the mine, because the "tributers sometimes discover very rich deposits of ore, which probably the shareholders would not go after."[135] Captain Bishop, however, the manager of East Pool, which may perhaps be ranked next to Dolcoath, and be termed the second mine in importance in the county, affirmed[136] that there were at present "no tributers" there; and a working miner alleged[137] that tutwork was by far the "most extensive" system, although, being a tributer himself, he did not wish to see tribute abolished.[138] Another declared[139] that tribute was "going less all the time," and was "very little now;" and a third, hailing from the St. Agnes district, stated[140] that in that part of the county the proportion of tut-workers and tributers varied at the different mines.

Confirmatory evidence of the change may also be gathered from recent issues of local newspapers. Thus in a report[141] of the mine of Wheal Basset, which was submitted by the agents at a four-monthly meeting held on 7th October, 1886, we read that not only was tutwork being employed in the work of preparation—not only for example was an engine shaft being sunk by nine men and three boys, at 60*l.* per fathom, a level being driven by six men and three boys, with a machine, at 8*l.* 10*s.* per fathom, and a winze being sunk by six men at 10*l.* per fathom—and not only were there in the "tribute department" twenty-two pitches being worked by sixty-four men on tributes varying from 6*s.* to 13*s.* 4*d.* in the £, on a standard of 50*l.* per ton for tin—but that also there were certain parts of the mine which were being "stoped" respectively by eight men at 7*s.* per ton, by six men at 6*s.* 6*d.* per ton, by eight men at 6*s.*, by six at 6*s.* 6*d.*, by six at 6*s.*, by nine at 6*s.* 6*d.*, by twenty-three at 6*s.* 6*d.*, and by two at 5*l.* per fathom and 4*s.* per ton of stuff. In an issue again of the same paper, which contained a report made on 9th September, we find that at the famous Botallack mine there were forty-nine men and nine boys opening, and eighty men and ten boys "stoping," ground on *tutwork and*[142] tribute.

---

[128] *i.e.*, on the Stannaries Act (1869) Amendment Bill.

[129] *Q.* 244.

[130] *Q.* 313.

[131] *Q.* 1301.

[132] *Q.* 1338, 1477—81.

[133] *Q.* 1324—26.

[134] *Q.* 1626—31.

[135] *Q.* 4346, 6016, and 6196.

[136] *Q.* 1910.

[137] *Q.* 1980 and 1981, 2222 and 2223.

[138] *Q.* 2372 and 2373.

[139] *Q.* 2549.

[140] *Q.* 3221.

[141] *Cf.* "Western Morning News," 8th October, 1886.

In the "West Briton" of 10th December, 1885, we are similarly told that the agents at Tolgullow United Mine reported that they proposed indeed to drive a certain level by six men at 7*l.* per fathom, and another by four men at 4*l.* 10*s.* per fathom, and that their tribute pitches were producing the usual quantity of tin, but that they also had four stopes at an average price of 7*s.* per ton working by sixteen men. In the same paper of 19th November, Captain Josiah Thomas is reported to have addressed the men at Dolcoath on their usual monthly pay and setting day, with reference to statements which have been circulated about their earnings, and to have included under the term "tut-workmen" "all those working in the ends, the winzes, the shafts, *and the* "*stopes.*"

It is true indeed that the system of tribute is not by any means defunct, even if it can strictly be described as being within measurable distance of death. For it is easy to discover several references to it in the reports of the different mines inserted in local newspapers, and the passages we have already quoted, together with those contained in the Parliamentary papers to which we have referred, might be used to illustrate this. In an issue indeed of the "Western Morning News," during the month of December, 1886, the agents of the Bedford United Mine are stated to have said that the work in one part of their mine was principally confined to the tribute ground which was available; and in the "West Briton" of 22nd January, 1885, it is reported that the year's accounts of South Condurron showed that the labour cost had amounted to 3,549*l.* for tut-workmen, and to little less, or 3,503*l.*, for tributers. The paper added indeed that a "great "deal of" the tin had been raised by tribute; that 106 tons, for example, had been raised by seventy-four tributers at an average cost of 25*l.* 16*s.* per ton, while the tin itself had realised an average price of 44*l.* 14*s.* In the same paper we read, on 31st December, of tributers working at Wheal Grenville, on 24th December, of six pitches working at West Seton, and, on 17th December, of ten pitches at Wheal Peevor.

---

[142] The italics are mine.

But, while the system of tribute is still by no means uncommon, there can be little doubt, as we have before remarked, that the system of tutwork is making encroachments upon it; and the following table of the comparative amounts charged at Dolcoath to labour cost and to tribute respectively during the space of two years will illustrate this:—

TABLE VIII.[143]

Date of Three Monthly-Meeting.	£ of Labour Cost.	£ of Tribute.
	£	£
February 2, 1885	10,837	1,528
April 7, "	10,658	1,362
July 20, "	10,699	1,570
October 12, "	10,708	1,883
January 4, 1886	10,933	1,717
March 29, "	10,869	1,023
September 14, "	11,388	1,293
December 6, "	11,607	1,673
Total	87,699	12,049

With this table it will be instructive to compare some figures given in "Cornwall: its Mines and Miners."[144] Thus in 1849 it appears that at the Fowey Consols Mines there were 358 tutworkers and 340 tributers. The tut-workers cost 16,347*l.* 10*s.* 10*d.* and the tributers 18,821*l.* 7*s.* 11*d.* And in 1836 in the Consolidated Mines the number of the tributers was 392 and their cost in wages 25,030*l.* 17*s.*, while the tut-workers numbered 441 and cost 26,177*l.* 5*s.* 8*d.*

The two facts then, which are thrown into the greatest prominence by our review of the history of the system of wages in the Cornish mines, are the encroachment of tutwork upon the province occupied by tribute, and the diminution of the intervals at which the payment of wages is made. The two changes are not without a connecting link; and this will appear more clearly when we examine the reasons to which they may be ascribed. But these reasons themselves will be more evident if we first devote some attention to the advantages and drawbacks of the general system.

---

[143] The figures in this table are taken from the reports of the meetings given in local newspapers. The meetings of the adventurers in Cornish mines are sometimes held every four months or sixteen weeks, and sometimes more or less frequently.

[144] Pp. 175 and 178. These two mines were representative of the largest mining enterprises of that date, and may consequently be properly compared with Dolcoath, which now occupies a similar position. *Cf.* S., Q. 1011.

VI.—*Its Advantages.*

In considering the system we must of course endeavour to base our judgment upon its essential merits and demerits, and to separate these, as far as may be possible, from any accidental accretions due to external influences.

Thus, in attempting to appraise at their true value the advantages of the system, we must draw attention to the significant fact that temperance, if not total abstinence, is a common quality among the Cornish miners, and that this has been ascribed in a large measure to the influence of Wesleyan Methodism. How far indeed Wesleyan Methodism has affected the general character of the miner it would be impossible to decide, for we could not determine upon the exact proportions in which his religious, his moral, and his economic conditions have acted and reacted upon one another. But there can be no doubt, as we have before noticed, that the "benign influences of that Gospel which" has been "so "faithfully and zealously promulgated" "by the Rev. John Wesley "and his coadjutors," have produced very remarkable and abiding results; and it is therefore necessary to allude at least to these influences in any review—however fragmentary—of the character and habits of the Cornish miner.

Passing on, then, to the more special subject with which we are at present concerned, the advantage which has been placed in the forefront by most of the writers who have described the system, is the prevention of industrial disputes. This advantage was naturally emphasised some forty or fifty years ago; for the contrast between the strikes and rumours of strikes in the other parts of the country and the peaceful condition of Cornwall was so remarkable that it must have forced itself upon the attention of the dullest observer. "Strikes are unknown." "The different "relations adjust themselves." "The rate of wages regulates "itself by the demand for labour." "There is no combination "or union; no disagreement and no strikes." These and other similar remarks are almost commonplaces in the discussions and descriptions of the Cornish mines of that date. And there can be no doubt that this language is amply justified. This advantage may be admitted without hesitation to belong to the system, whether it take the form of tutwork or tribute.

But we shall obtain a clearer idea of the nature of this advantage, and perhaps derive some assistance in considering the problems of co-operative production, if we ask, and endeavour to answer, the question: "Why is it that there are no strikes," and that "the different relations adjust themselves?" The answer is simple: it is because, as a local newspaper puts it,[145] the workman is "in a sense his own employer."

Now Professor Walker has shown[146] that the real essence of co-operative production consists, not as is sometimes supposed in the possession of capital by labour, but in the elimination of the employer. It is in this sense, and in this sense alone, that co-operative production can be strictly said to imply the cessation of industrial strife; and even in this sense it would probably be more correct to speak of the mitigation of strife rather than of its entire cessation. For the system pursued in the Cornish mines does not necessarily imply the *abolition* of strife, although it is true that in its practical working contention has been reduced to a minimum, and disputes of large proportions have generally been unknown.[147] And why? Because the different "pares" of workmen compete directly against their fellow workmen for a share in the distribution of wealth; and the employer does not intervene as a "buffer" or middleman between one batch of workmen and another.

But this, it is to be remembered, by no means carries with it the conclusion that contention might not arise between the different workmen if they were united in a large business and directed that business themselves. On the contrary, it may be forcibly argued that it rather tends to show that the spirit of contention, instead of ceasing, would be likely to present insuperable obstacles to the successful conduct of the business. For the system in the mines may be said to succeed because the enterprise of the workmen is confined in each instance to a comparatively narrow sphere, and also because the different pares enter into direct competition with one another, and their interests on the "setting day" are to that extent divergent. But this divergence of interests would be very likely to be fraught with fatal consequences to the success of co-operative production if it were projected on a large scale; and it is not enterprise on a small scale, but the management of large undertakings which is generally contemplated by the advocates of that system.

---

[145] "Redruth Independent," 10th April, 1885.

[146] *Cf.* "Wages Question," chap. xv.

[147] They cannot, however, be strictly said to be entirely "unknown," for in 1866 we read of a strike at Trelawny mine (*cf.* "Cornish Telegraph," 17th January, 1866), in 1872 of a strike at Wheal Basset (*cf.* "West Briton," 4th January, 1872), and in 1878 and 1879 (*cf.* ibid., 3rd January, 25th April, 23rd May, 1878; also "Mining Journal," 11th January, 1879), of two strikes at the Devon Great Consols Mine, one in resistance—partly on the ground of the avoidance of any increase in the indebtedness of the miners to the local shopkeepers—to the reintroduction of the five-weekly in lieu of the four-weekly month established in 1872, and the other in opposition to the abolition of "Maze-Monday," as the Monday following the pay-day was termed. This day was given, according to a witness before a parliamentary committee in 1887 (*cf.* S., *Q.* 1541), for the repair of tools, &c., for the succeeding month, and is now less prevalent than it was (*cf.* S., *Q.* 1550). These disputes, however, instructive as they undoubtedly are, may perhaps be fairly regarded as the conspicuous exceptions to a general rule, and it is not without significance that the men are reported to have evinced considerable anxiety during the strike of 1878 that no damage should be done to the mine.

It is true indeed that one of the writers in the "Penny "Magazine" states[148] that even the Cornish miners may sometimes combine to prevent less than a certain sum being accepted as the price for which a contract is taken; and Mr. John Taylor declares[149] that it is precisely this danger "of combination" which is "effectually prevented" by that declaration of a reserve price which is usually made by the agents. It may also be the case that with a view to enforcing some such conditions as this, an union may eventually be established. For in some respects at least the interests of all the miners may be identical, and the concentrated strength of an union might enable them to obtain some of the reforms they may consider desirable.

But the formation of such an union would also in all probability exercise no inconsiderable influence upon the nature of the system itself; and there can be no doubt that the fact hitherto placed in the greatest prominence on the setting day has been the divergence of interests between the different pares.[150] It is from this point of view that the system sheds a flood of instructive light on the problems and limits of co-operative production. The system pursued in the slate quarries of North Wales, which attracted the notice and commendation of Cairnes,[151] and the practice sometimes adopted in railway construction of letting sub-contracts to gangs of navvies,[152] have their analogies with the Cornish system; but in no case has the divergence of interests between the several small parties of workmen been more strongly brought out than on the setting day at a Cornish mine.[153]

---

[148] 27th December, 1836.

[149] "Geological Transactions," vol. ii, p. 317.

[150] These parties or pares consist sometimes of as many as twelve men and boys, sometimes of sixteen, sometimes of eighteen, sometimes even of twenty-four or thirty-six. They generally divide the money they earn in equal shares; but in some instances they may employ a labourer, or some of their own number may be boys working at a lower rate of pay. This last fact indeed was adduced by a witness before a committee of the House of Commons in 1887 as a powerful argument against a proposal for a separate payment to each member of the pare in lieu of the existing system of a lump payment to the "taker." It appears that in some instances these payments have been made, not in cash, which can be readily divided among the several partners, but in notes which have to be taken to a public-house, and there changed and distributed. In other cases, however, the sum has been paid in "small cash;" the purser has been willing to give change, if asked; and the money has been divided without recourse to a public-house. A special clause to this effect was inserted by the committee in the Bill which had been referred to them, and is contained in the Act as passed. It need not, however, be pointed out that the possibility of such difficulties and disputes over the division of the earnings—infrequent as they appear to be—supplies an additional basis for the argument we have adduced in the text; and in the "bal-bills" of at least one mine the purser seems to have himself indicated the average amount belonging to each of the partners in the pares. Sometimes, indeed, it may happen under the system that a man may be set to work with partners he does not like,—although it appears the agent would in most cases readily alter the arrangement if he were asked to do so, and in the St. Agnes district at least, though not apparently in the

From another point of view the essential characteristic of co-operative production, and the fact that it involves the elimination of the employer and not of the capitalist, are strikingly illustrated by the Cornish system. For the miners, whether working by tutwork or tribute, can scarcely be described as capitalists; but they may with some reason be termed employers. They do not themselves supply the materials, the tools, or the machinery; but these are furnished to them by the adventurers, or advanced by the merchants, and are charged against their accounts at the end of the month. It is true that they have not hitherto received their earnings until the setting day, and that their wages have been as a rule a month in arrears. Lord Kinnaird's commission[154] stated in its report that "wages were frequently paid only once a month, and a month's wages kept "in hand;" and this statement rested upon the evidence of several witnesses. So far then they might appear to be capitalists.

But on the other hand, "cist" or "subsist" has often been advanced to them;[155] and there is only too much reason to fear that they are in a chronic state of indebtedness to the local shopkeepers. For, as Lord Kinnaird's commission pointed out,[156] the consequence of keeping a month's wages in hand was that a miner who came to a fresh mine did not receive any pay for the space of two months; and therefore, the commissioners add, he "generally "contracts debts to the smaller shopkeepers." "The miners," they

---

neighbourhood of Redruth, the taker—subject to the agent's approval—can choose his own men. "Generally," however, it would now seem, "the same gang go "together, and, unless the men differ very much on the point of price, the one "pair usually succeeds to the same place, and sometimes holds it for many months "or even years together." (*Cf.* S., *passim.*)

[151] "Essays in Political Economy," No. V.

[152] *Cf.* "Lectures on the Labour Question," by T. Brassey, p. 139; *e.g.*, the "butties" in South Staffordshire collieries. ("Report of Select Committee on "Mines," House of Commons, 1866, *Q.* 5318, 5578, &c.)

[153] The competition on the setting days is said, however, to be now becoming much less keen. *Cf.* below, sec. ix.

[154] P. xxiii.

[155] *Cf.* M, 2453, 3585, 7859, and 8809. The monthly payment was also found in the lead mines of the north. *Cf.* *Q.* 13629 and 13442.

[156] Report, p. xxxiii, *Q.* 3584.

remark in another passage, "are frequently involved in debt." A witness before the commission emphatically declares[157] that the "curse of the population" is "most certainly" "the large number "of miners" who "are in debt to the small shopkeepers" or to "travelling packmen," and he says that this indebtedness arises in some degree from the month's arrear. Another witness describes[158] the change which had been effected in a mine in the north of England of making monthly instead of quarterly payments as "one of the greatest advantages" the mine possesses; and he adds the significant statement that under the former system the men were "over head and ears in debt." The "Daily News" correspondent in Cornwall in 1885 similarly characterises[159] the "credit-"giving shopkeeper" as the "miner's best friend," and supplies an account—humorous indeed, but very instructive—of an interruption which was made at an electoral meeting. An orator was concluding his speech with the question, "and now gentlemen, "can you tell me who is your best friend?" when he was met by the unexpected reply, "the shopkeeper." On the whole then it seems that the Cornish miners may be more correctly described as employers than as capitalists, and that the comparative absence of strife is due not to the elimination of the capitalist, but to the practical disappearance of the employer.

It is certain however that the interests of the miners are more closely bound up with the prosperity and adversity of the mine than would be the case with mere wage earners. Even the tut-workers have a direct interest in the increase of the work done. So far indeed their position is analogous to that of wage-earners who are paid by the piece; and as Professor Marshall has shown[160] all piecework of necessity involves an element of co-operation. They are distinguished however from mere piece workers, because they are debited with the cost of all the materials and tools supplied, and make their own contract in an open market which is manifestly adjusted to the conditions of supply and demand. As Mr. John Taylor remarks,[161] in the performance of work by contract the Cornish system is "probably similar" to the practices followed elsewhere. But it is the "plan of making" the contracts "which it is believed is peculiar to Cornwall"—the plan of "periodically bringing all the work to a kind of public auction."

It is however in the system of tribute that the interests of the

[157] *Q.* 10287—90. *Cf.* also Report on Housing of Working Classes, *Q.* 8094.

[158] *Q.* 17825.

[159] "Daily News," 17th and 21st September, 1885. This indebtedness to the shopkeeper probably must mean higher prices than would prevail under a cash system. (*Cf.* S., *Q.* 2003, 2184, 3225, and 3351.)

[160] "Economics of Industry," iii, ix, 2.

[161] "Geological Transactions," pp. 316 and 317.

workmen are most intimately connected with those of the adventurers, for here they share in the price that is realised. Babbage's words are worth quoting in this connection. He is discussing the question of industrial partnership—"a new system of manufac-"ture," as he termed it—and he remarks that the "conditions" of this new system are "that every person employed should derive "advantage from the success of the whole, and that the profits of "each should advance as the factory itself produced profits without "the necessity of making any change in the wages." And then he proceeds[162] to say that the system which "has long been pursued "in working the Cornish mines, although not exactly fulfilling these "conditions, yet possesses advantages which make it worthy of "attention as having nearly approached towards them, and as "tending to render fully effective the functions of all who are "engaged in it." Tribute, however, he characterises as being especially good. "No other method," he declares, "affords to the "workers a measure of success so directly proportionate to the "industry, the integrity and the talent which they exercise." In similar language Mr. John Taylor maintains that tribute is the part of the Cornish system which is most deserving of attention—a system which, he declares, "so completely answers the purpose "of combining the interests of the working miner with those of "his employer."

As the result of this combination of interest—this "quasi-"partnership," as it may perhaps be termed—two consequences follow which are indeed in some respects implied in one another. The independence and foresight of the workmen are elicited; and the maximum of output is secured. The miner, whether he works by tutwork or by tribute, has to employ his own judgment with regard to the character of the work. He has to calculate the expense it is likely to entail in the way of materials, &c. He has, in short, to exercise foresight and intelligence. He is thrown to a great extent on his own resources, and is responsible to himself for success or failure. And hence it was that Mr. Laing in 1842, in the "Atlas Prize Essay" on National Distress described[163] Cornwall in the most glowing terms, basing his opinion on the report[164] of the Children's Employment commission. This is "by many degrees," he writes, "the brightest picture we have ever met with of the "condition of any considerable portion of the labouring class in "England at the present day." And he quotes from the report the significant statement that "the miners are not only as a class "intelligent for labourers, but men of considerable knowledge. "They have a character of independence something American."

---

[162] Sec. 306.

[163] P. 44.

[164] *i.e.*, on the report of Dr. Barham. *Cf.* Appendix to Report, pp. 758 and 759.

Lord Kinnaird's commission again describes[165] them in similar language as being "particularly courteous and intelligent." "Their "information," the commissioners say, "especially on religious "subjects, is remarkable." A writer in the "Leisure Hour" goes yet further, and declares[166] that "as practical miners there are no "better men than have been brought up in the mines of Cornwall." "It may fairly be assumed," maintains[167] another writer, "that the "solution of every intricate problem in mining geology is generally "assigned to a Cornish agent, and every task requiring skill, "resource, and courage intrusted to a Cornish miner."[168]

The intelligence to which these assertions testify is partly, no doubt, to be ascribed to the diversified character of the Cornish miner's work. It may be true, as a witness stated[169] before Lord Kinnaird's commission, that a tut-worker experiences difficulty in working at tribute, and a tributer does not care to work at tutwork; although indeed we have to set against this the fact that among the cases of accident and illness into which the doctors appointed by the commission made inquiry, there appear[170] to have been many instances of men who had worked under both the two systems. It may also be true that the speculators, who took out[171] parties of Cornishmen to work at the mines of South America and Mexico, wilfully shut their eyes to the fact, that "a copperer is not "a tinner;" but there can, on the other hand, be little doubt that as a rule a Cornish miner is less of a specialist than a coal or iron miner, that he generally can, if necessity require, sink a shaft, or winze, or drive a level, or stope a pitch, and that he has more occasion for the employment of his resource and intelligence, because his work is more varied in character. Dr. Foster, for example, in his evidence before the commission appointed to inquire into accidents in mines, stated[172] that each man was "expected" in the Cornish mines to "learn the art of setting "timbers," and that the "miner, as a rule, timbered his own "working place."

By far the greater amount however of the intelligence of the miner may be fairly ascribed to the system under which he works.

---

[165] P. xxv.

[166] "Leisure Hour," 1879, pp. 169, &c.

[167] "Encyclopædia Britannica," 9th edit., "Cornwall."

[168] Sir Waryngton Smyth, in a lecture at the Royal School of Mines, is reported to have observed that the men who worked for daily pay in Cornwall were called "owners' account-men," and regarded by the other miners with some contempt. (*Cf.* "Mining Journal," 1867.)

[169] *Q.* 5046.

[170] Appendix B, parts i and ii, *passim.*

[171] *Cf.* "Quarterly Review," vol. xxxvi.

[172] Report, *Q.* 4149 and 4273. Dr. Foster added that there were also special timbermen, who would be employed when an amount of work unusually extensive was needed.

The correspondent of the "Daily News" notices[173] the "effect" which his "very calling has in developing" his "intelligence;" and Mr. John Taylor maintains that to "the habits of investigation "induced by the plan of payment may probably be attributed a "great deal of the intelligence observed among the Cornish "tributers." The system in fact is one—and this is especially true, as the passage we have last quoted indicates, in the case of tribute—which "teaches the miner to live by his wits." He shares indeed with the coal miner the educating influence—so far as the expression can be correctly applied—of "working in small "parties out of the sight and hearing of his fellow men," and he may said to have, like him, "daily to ward off accidents."[174] But in a far more real sense than the coal miner he is "every day "called upon to exercise his individual ingenuity and power of "invention."

This is true of the tut-worker and also of the "kind of tributer" who, as we have said,[175] may be regarded as occupying an intermediate position between tutwork and tribute. Of these latter workmen indeed, who receive a certain payment per ton of mineral extracted, a witness declared[176] before Lord Kinnaird's commission that "they depend quite upon their own resources. If they "break down 'deads,'" he remarked, "instead of tin, they get "nothing for it. They are confined to breaking tin-stuff that will "pay for stamping when it is brought to the surface." So too in the case of tutwork, as another witness from the north of England remarked,[177] the men may sometimes find that the bargain turns out well, and sometimes that it turns out ill.

The tut-worker, however, may proceed to some extent by rule, and the "kind of tributer" may be said to speculate chiefly on the probable yield of the lode in quantity; the ordinary tributer on the other hand speculates in a fuller degree on its quality, and also on its probable price, and has therefore in a peculiar manner to exercise his powers of conjecture. In an undertaking which is confessedly of so speculative and deceptive a character as tin or copper mining, he has to judge by appearances whether the pitch is likely to turn out well or ill. He has then in a very real sense to speculate on the future, and has been not inaptly described as a "kind of sub-"terranean stock-jobber." The description derives support from the language of a witness before a Parliamentary committee in 1887, who declared[178] that the Cornish tributer was "to some "extent an adventurer himself," and from the significant observation made by[179] a correspondent of the "Daily News" in 1879, to the effect that the tributer enjoyed the "excitement of "gambling."

---

[173] 17th September, 1885.

[174] "Dublin University Magazine," vol. lviii.

[175] *Supra*, sec. v.

[176] *Q.* 785 and 1406.

[177] *Q.* 13928.

[178] S., *Q.* 33.

This speculative character has, it is true, its drawbacks, and it may be doubted to what extent the system encourages thrift. It is true that the miners, like the members of co-operative distributive societies, receive sums of money in the lump,[180] and may therefore in some sense be said to be tempted to save. It is true again that the system may lead them to look forward for a month or a longer period. But it may also engender—in some measure at least under its form of tribute—a hazardous venturing of all on the doubtful issues of the future. It is hardly without significance that some of the evidence given[181] before Lord Kinnaird's commission tended to show that the majority of those who had houses of their own were tut-workmen rather than tributers.

Nor indeed can the general system—whether of tutwork or tribute—be proved to be very influential in encouraging thrift.[182] It is true that as large a proportion as a quarter of the population of Camborne were alleged[183] before Lord Kinnaird's commission to "live in houses which" were "the property of labouring miners;" but the commissioners themselves state[184] that the "general "practice in Cornwall is to let ground for building on leases of "three lives," and the three-life system can hardly be described as being of anything else than a speculative character, especially when the lives of the miners themselves, which are abnormally brief, are[185] inserted in the lease.

It is also true that the prices at which the materials have been supplied to the men have been generally above the cost price, in order, as one witness stated,[186] to "make" the men "economical," and, as the commissioners themselves remarked, to "prevent" them from "wasting or selling."[187] In foreign mines, however, it seems that in some cases no such deductions as those known in Cornwall are made, but the materials are supplied without cost by the shareholders.[188] In others they are made, but the cost price alone is charged, or it may be a little more to defray the expenses of carriage.[189] Even in Cornwall itself the reason alleged for the higher price—however effective it may, or may not, have been in the past[190]—is said now to be seldom realised in fact;[191] and before a Parliamentary committee of 1887 one witness declared[192] that the materials might easily be charged at cost price. Another mentioned[193] as a reason for the change the fact that, should the ground unexpectedly prove unfavourable to a miner, his burden would be appreciably increased by the higher price of the materials, although, as it was variously contended, this disadvantage might,[194] or might not,[195] be taken into account when the next contract was set, and the practice might also result in advantage to the men if the ground proved more favourable than they had anticipated.[196] But, whatever be the truth of these contending arguments, the Stannaries Act of 1887 provides for the approximation of the price charged to the cost price; and the previous arrangement,

---

[179] 14th January, 1879.

[180] *Cf.* S., *Q.* 1143 and 1531.

[181] *Q.* 10510.

[182] The men may indeed, and sometimes do, check their bal-bills by keeping their own accounts (*cf.* S., *Q.* 856 and 4836), but complaint has been made that on some bills the various items are not specified with sufficient detail to enable this to be effectually done; that the headings of "sundries" and "etceteras" are capable of an elastic comprehension; and that the methods of computation adopted by the agents are not always intelligible with ease and rapidity (S., *Q.* 3477, 3485 and 3486, and 3853—56). The Stannaries Act of 1887, however, makes special provision for this.

[183] *Q.* 1033. *Cf.* S., *Q.* 1142. It has been also alleged that these purchases have been made out of foreign earnings. (*Q.* 1869, 2541, and 5663.)

[184] P. xxv. *Cf.* "Report on Housing of Working Classes," *Q.* 7930 and 8078.

[185] Ibid., *Q.* 8079.

[186] K, p. xxiii, *Q.* 9074. *Cf.* *Q.* 7849, 8627, 8762, 8967, and 9063. The same practice was found to prevail in the north. *Q.* 13633, 13830, 17374, and 17437. To give some idea of the extent of the profit thus made by the mines, *cf.* the

following table based on one prepared for Lord Kinnaird's commission. (*Cf.* Report, Appendix B, xi, p. 436.)

TABLE B.

Mine.	Quantity of Candles.	Price per lb.		Profit.	Quantity of Powder.	Price per lb.		Profit.	Total Profit.
		Cost.	Sold.			Cost.	Sold.		
	lbs.	*d.*	*d.*	£	lbs.	*d.*	*d.*	£	£
Dolcoath	51,000	5½	8	531	35,350	6	8	294	825
Huel Clifford	63,936	5½	7	399	29,000	6	8	241	640
Par Consols	51,086	6	8	425	63,445	6	8	528	953
Prosper United	96,000	5¾	7	500	27,600	5½	6	57	557
	262,022	—	—	1,855	155,395	—	—	1,120	2,975

---

[187] The materials which are not used are returned to the store, and credited to the taker at their full value—in the case of the powder and candles at the price charged, according to the value in the case of the shovels, saws, or axes (*cf.* S., *Q.* 1157 and 1158). The item of "smith's cost," it may be noticed, apparently includes a charge for the difference in the weight of the tools between the time when they are taken and the time when they are brought back. (S., *Q.* 1183, 1184, and 365.)

[188] S., *Q.* 2761, 3303 and 3304; *contra*, *Q.* 253, 5620 and 5621.

[189] S., *Q.* 3167.

[190] S., *Q.* 3487 and 5018.

[191] S., *Q.* 591, 4089, and 4836.

[192] S., *Q.* 5256 and 5257.

[193] S., *Q.* 2705, &c. *Cf.* *Q.* 3821 and 4085.

[194] S., *Q.* 547 and 548.

[195] S., *Q.* 5256 and 5257.

[196] S., *Q.* 2722.

though it might indeed have resulted in thrift, is scarcely to be cited as evidence of the possession of that quality.

Nor must we forget to notice in this connection that chronic indebtedness of the miners to the local shopkeepers to which we have before alluded,[197] although we must also in fairness set against this the fact that Dr. Barham, in the report to the Children's Employment commission to which we have already referred, stated that 28,541*l.* were deposited in savings banks in Cornwall, and that two-thirds of this sum were supposed to belong to the miners.[198] And with this we may compare a statement of the correspondent of the "Daily News," who visited Cornwall in 1879 at a time of deep distress in the mining and fishing industries—"the fish, tin, and copper" of the county toast. He declares emphatically that the Cornish "abhor pauperism"[199] and "despise "parish relief."[200] "They shrink," he adds, "from the taint of "pauperism as they would from the plague."

But, while the encouragement afforded by the system to habits of thrift is, as we have maintained, at least open to argument, its influence on the intelligence of the workman cannot be doubted. And for this reason alone it is likely to result in the maximum of output. But there is also, as we have noticed, an additional reason; and that is to be found in the interests of the workmen. This again is more especially the case with regard to tribute. For by means of this practice unpromising parts of the mine, which otherwise would never have been worked, are taken by venturesome miners. Sometimes they succeed and make a "start" as it is called; and then they reap a fortune. Sometimes they fail. But, whatever be the luck of the miners, the result to the adventurers is that the mine is worked. And thus in some answers received from practical miners to questions addressed to them by the author of "British Mining," we find the instructive statement[201] that poor mines might be worked "for many years on tribute," paying their cost and "making more or less profit," while they could not exist for six months without incurring a heavy loss if worked on tutwork.

VII.—*Disadvantages and Abuses.*

The Cornish system, it is true, is open to abuses, and has its disadvantages; but in considering its drawbacks, as in discussing its merits, we must endeavour to ascribe to the system itself only that which fairly attaches to it. There are abuses connected with it, as indeed with all other systems. The tut-workers may put in faulty timbering; and the tributers—although it may seem to be scarcely to their interest to do so—may send comparatively worthless material to the surface. This is said to be the reason for the "returning charges"—as they are called—which are imposed[202] at a certain rate per ton, varying according to the quality of the stuff. The "hauling charges,"[203] again, with which the tut-workmen are sometimes debited, are also said to be levied for a similar reason, save that in this case it is the amount of rubbish and not the poor quality of the ore which is in question.

---

[197] *Supra*, note 164.

[198] *Cf.* "National Distress," p. 41.

[199] "Daily News," 8th January, 1879.

[200] Ibid., 14th January.

[201] P. 864. *Cf.* also "Daily News," 14th January, 1879, where it is said that the system enables the owners to employ men in bad times. *Cf.* K, *Q.* 2235.

The tributers once more may unintentionally leave small portions of rich ore behind them, or conceal it beneath the rubbish or deads; or they may be guilty of intentional fraud. Two of them may secretly agree to share their ores, if the one has a pitch which turns out poorly, and the other has one which promises well. They may both work when they can at the promising pitch, and produce indeed the maximum of ore. But should it have been granted on relatively higher terms by the captain, they gain, and the adventurers lose by the fraud, for the pitch would otherwise be let on more unfavourable conditions at the next setting day. Or again they may consciously endeavour to conceal a promising part of the lode by placing rubbish above it, and may thus secure its being set on more favourable terms.[204]

Some of these abuses indeed may be ascribed to the special system of tribute, and will receive our attention later; but many of them are of a minor character, and would probably occur under any system. It is then with considerable truth that Mr. John Taylor remarks that the chances of fraud are "in fact under "intelligent and faithful agents of too trifling a nature to be "accounted of any importance;" and it is precisely to prevent these abuses that the captains, who have invariably been miners themselves, are appointed.

Again, there can be no doubt that the mortality among the Cornish miners must be characterised as excessive. But it would be a mistake to attribute the whole of this mortality to the system under which the mines are worked, although, as we shall see later, the causes which affect the rate of mortality exercise also a curious special influence on the respective classes of tut-workers and tributers. The general question too has some indirect connection with the system of working the mines. As Lord Kinnaird's commission stated,[205] "the mode of working in the mines and the

---

[202] S., *Q.* 517, 726, 1164 and 1165, and 2023.

[203] S., *Q.* 523—25.

[204] *Cf.* Report of Lord Kinnaird's commission, *Q.* 3153 and 3549, and "Penny "Magazine," 27th December, 1834.

[205] P. vii.

"wages of the miners" might indeed "at first sight appear to be "foreign" to the inquiry into his health and safety with which the commissioners were concerned; but they did as a matter of fact "substantially" affect the questions they had to solve.

The mortality is, as we have said, excessive. Lord Kinnaird's commission, after remarking[206] that "it may be affirmed as a "general proposition that the health of the copper, tin, and lead "miners as a class, is greatly inferior to that of labourers engaged "in agricultural and other open air employments," proceeds in strict accord with this remark to state that the "delicate condition" of the Cornish miner "is the more striking when contrasted with "the vigorous health generally presented by the women and "children in the same districts." But we may unfortunately go further than this. It may at first sight seem surprising that statistics should prove that the greatest danger the miner has to confront is not that of explosions.[207] And yet explosions in the sense in which they are known in coal mines are foreign to Cornish mining;[208] while on the other hand the rate of mortality among the Cornish miners is in excess of that among the colliers in any district of England. The death-rate from accidents indeed was less in Cornwall and Devon for the decade extending from 1874 to 1883 than it was among the coal miners. But, if we include in our estimate the mortality from *all* causes, we find that in the ten years 1871-80 Cornwall headed the list, and more than doubled the rate among the colliers. And here the reports prepared by the two doctors who were appointed by Lord Kinnaird's commission to inquire into this excessive mortality, may be cited as bearing corroborative testimony;[209] for the sanitary condition of the mining population was described by them as "very defective." "It is a "common remark in Cornwall," the commissioners themselves stated, that "a person of fifty is old for a miner;" and some statistical tables of comparative rates of mortality prepared for them by Dr. Farr, showed that in other mining districts the mortality amongst the miners was less than that of the males generally in the corresponding area, but that in the case of the Cornish miners this relation was reversed.

The following table, which is based on two tables supplied[210] to the commission, will illustrate this point, and will also indicate the comparative excess of mortality among the Cornish miners as contrasted with that among the northern colliers to which we have already called attention. The time to which the table relates is the period between 1849 and 1853.

---

[206] Pp. viii and ix.

[207] *Cf.* Mr. Frecheville's Report, August, 1886. *Cf.* also Dr. C. Le Neve Foster on "Mining" in "Encyclopædia Britannica," and his paper read before the British Association, 1884. *Cf. Statistical Journal*, vol. xlviii, part 2, June, 1885, pp. 277—79.

[208] There is indeed a dangerous inflammable gas, but it is rarely found. S., Q. 363.

[209] *Cf.* Report, p. ix.

[210] *Cf.* Pp. x and xi.

TABLE IX.—*Average Annual Number of Deaths per* 1,000.

Ages.	Cornish Miners.	Northern Coal Miners.	Males in Cornwall.
15—25	8·90	8·50	7·12
25—35	8·96	8·49	8·84
35—45	14·30	10·13	9·99
45—55	33·51	16·81	14·76
55—65	63·17	24·43	24·12
65—75	111·23	65·16	58·61

It might at first sight seem that a plausible explanation of this excessive mortality could be found in the extensive emigration which has proceeded from Cornwall. The numbers of the Cornish miners appear to have decreased some 34 per cent., as we have seen, between 1871 and 1881, and 27 per cent. between 1861 and 1871; and the emigrants would naturally include the youngest and most healthy, who might return in their old age to die at home. But the validity of this hypothesis is discounted by the facts that the excessive mortality dates back to a time anterior to the emigration, and that the diseases to which it is chiefly due are those of phthisis and the respiratory organs.[211] "The cases of "disease," remark[212] the doctors appointed by Lord Kinnaird's commission, are "chiefly asthmatic affections, resulting from bronchitis, "pneumonia, and disease of heart, and more rarely true tubercular "consumption." "Rheumatic disorders," they add—and we shall see the bearing of this later—"and various dyspeptic symptoms "are of common occurrence." This point will be illustrated by another table contained[213] in the report of the commission:—

TABLE X.—*Average Annual Number of Deaths per* 1,000 *from Pulmonary Diseases,* 1860-62.

Ages.	Miners.	Males in Cornwall, Exclusive of Miners.	Ages.	Miners.	Males in Cornwall, Exclusive of Miners.
15—25	3·77	3·30	45—55	19·75	4·34
25—35	4·15	3·83	55—65	43·29	5·19
35—45	7·89	4·24	65—75	45·04	10·48

---

[211] *Cf.* Registrar-General's Report, 1885, Forty-fifth Report, especially Dr. Ogle's Report, p. liv in supplement. Dr. Ogle states the decrease of the miners between 1871 and 1881 as 44 per cent.

[212] *Cf.* p. ix.

[213] P. xiii.

According to the registrar-general[214] again, the Cornish miners suffer from phthisis and diseases of the respiratory organs more than three times as much as Cornish males, and more than twice as much as the miners in any other mining district. They also, he—like the doctors appointed by Lord Kinnaird's commission—adds, "suffer from diseases of the digestive organs, but," he goes on to remark, "are little affected by diseases traceable to alcohol." Indeed, with regard to this last point, the commissioners themselves declare[215] that the "miners as a class are well conducted and "temperate. Large numbers have taken the pledge, and kept it, "and, whatever may be the causes of the diseases to which they are "liable, the habit of intoxication cannot be assigned as one of "them."

What then are the causes of this excessive mortality? Partly no doubt it is due to the character of the food[216] the miners habitually eat—to its lack of nutritive qualities, and to the hindrances it presents to digestion; and this fact was expressly noticed by the commission as a cause of the dyspeptic symptoms we have mentioned above. Partly also it is due to the carelessness of the men, and especially to the practice of racing up the ladders which is common among the younger miners; and here again the commissioners remark[217] that the evil effects of climbing are "aggravated "by the indiscretion of the miners themselves, especially the "younger men, in mounting the ladders with too much haste."

But in mentioning this last fact we have alluded to one of the primary causes. It is not the racing, but the mere necessity of climbing these ladders, which affects so seriously the vitality of the men. The doctors, for instance, appointed by Lord Kinnaird's commission enumerated[218] as causes of the unhealthy condition of the miners the "early age" at which they then commenced work, the "impurity of the air,"—the heated, draughty, and damp atmosphere in which the labour was too frequently carried on—and "the severity" of their exertions, "especially in deep mines, where "ladders were the only means of access." "The exposure to cold "and damp at the surface or in the shafts" was, they maintained, "the most frequent exciting cause of disease," "operating with "peculiar severity on men in a state of perspiration or exhausted "by working in close places," or by ascending "ladders from great "depths." The commissioners themselves similarly declared[219] that the "method of descent and ascent by means of ladders," which was "almost universal" in Cornwall and Devon, "caused a "great waste of time and strength to the miner," who in many cases "worked" at a depth below the surface "of from 250 to "280 fathoms." There "were" mines, they stated, "at which not "less than three hours were expended by the miner in going to and "returning from his work." "The evidence" to which they had listened left "no doubt on their minds as to the pernicious effects" of the "severe climbing;" and they strongly recommended[220] the introduction of man-engines or some other mechanical contrivance for raising and lowering the men. Fifteen years later than this, however, we still find Dr. Foster, in his evidence before the commission on accidents in mines, employing similar language, and declaring[221] that the "heavy work of ascending and descending" the "ladders" does "undoubtedly" "cause suffering to the men." In the following year the report of Her Majesty's inspector draws[222] attention to what it describes as the "disgraceful supineness" exhibited by the Cornish companies in the matter, and characterises their attitude as one of "surprising apathy." Nor even now is it any exaggeration to say that a very considerable portion—if not the greater part—of the going up and down appears to be done by means of ladders.

---

[214] Report, 1885. *Cf.* the term "miner's complaint," which is commonly used, S., *Q.* 3317.

[215] P. xxv, also *Q.* 3297 and 10152. *Cf.* also S., *Q.* 763 and 5662.

[216] Especially the "pasty." *Cf.* Appendix B, I, p. 5. *Q.* 3714 and 3753.

[217] Report, p. xliii.

[218] Pp. ix and x.

[219] P. xiv.

It is true that Mr. Frecheville in his report of 1882 stated[223] that more attention had been given of late to the question of raising the men by means of such machinery as cages or "gigs." It must be admitted also that in the adoption of man-engines some hindrance and difficulty is occasioned by the fact that some of the shafts are sunk in an oblique instead of a perpendicular direction.[224] And this coupled with the fact that the same single shaft does not go down to the bottom of the mine, is partly the reason why in some of the mines where man-engines have been erected, the men are relieved of only a part and not of the whole of the climbing. In Dolcoath, for example, Dr. Foster stated before the commission on accidents in mines that the bottom of the mine was 352 fathoms deep,[225] but the man-engine did not go lower than 240. In Carn Brea the man-engine went down to 170 fathoms, but the mine itself was worked to nearly twice that depth; and in Cook's Kitchen the man-engine descended to little more than a third of the depth of the mine.

But, after we have made abundant allowance for all such considerations, the comparative absence of mechanical contrivances might well awaken surprise, and was noticed by Mr. Frecheville in 1886 as a cause which had not ceased to help in producing an "appalling excess of mortality." In the following year again, a Parliamentary committee, employing language with which we have now become painfully familiar, alluded[226] in its report to the "excessive mortality" of the Cornish miners; and evidence given[227] before this committee might effectively be quoted as showing that man-engines, or other mechanical contrivances, were still far from being universally adopted. And yet some twenty years ago or more facts laid[228] before Lord Kinnaird's commission—facts which were not contradicted—undoubtedly tended to prove that the introduction of the man-engine had been followed by manifest improvement in the working capacity of the miner, and that in the majority of cases the initial cost was more than outweighed by the saving effected in physical wear and tear.

---

[220] P. xliii; and also *Q.* 3448, 3525, and 3732, in fact *passim.*

[221] Report, *Q.* 4297.

[222] Mines Inspectors' Reports, 1880 and 1881.

[223] *Cf.* Report 1882, S., *Q.* 5734.

[224] S., *Q.* 714.

[225] S., *Q.* 1856.

In addition to the causes of mortality on which we have been dwelling, Lord Kinnaird's commission gave[229] prominence to the indifferent ventilation of the mines, and the absence of dressing rooms close to the shaft. The miners had "frequently to walk "considerable distances to the place where they changed their "clothes;" "the changing houses" were "too often far from the "footway shafts," "and ill adapted to their purpose." Here again the lapse of time has brought with it undoubted improvement,[230] and the Metalliferous Mines Regulation Act of 1872 expressly dealt with these evils. But still, so recently as 1879, Dr. Foster maintained[231] that the ventilation in the mines, though it had been rendered more thorough by the provisions of remedial legislation, was yet "not as good as it ought to be;" and the "Mining "Journal" of 7th August, 1886, added to a report of the opening of a new changing house at Dolcoath, the significant commentary that there was "room for improvement in the changing houses" in Cornwall.

These defects may perhaps in some measure be ascribed to the fact that the adventurers, who are of course the proprietors of the mines, do not come into actual contact with the miners, but form an absentee corporation. They are therefore presumably subject to the failing attributed—not without some exaggeration—to corporate bodies, of possessing no conscience. There is no resident employer to encounter the indignant assault of public opinion, if indeed there be upon these particular points a sufficiently pronounced public opinion at all. And so Lord Kinnaird's commissioners declare[232] that while they have reason to believe that the agents and managers "are by no means insensible" to many of these "defects," and while they "are confident that as a body they are anxious to "promote the safety and comfort of the men," and that in "established and well-managed mines," which are conducted with a view to the legitimate development of the mineral property, attention is generally given to their "recommendations," yet there is only too much reason to fear that this is not the case in mines of a "more speculative character," where every "outlay "beyond what is absolutely necessary is avoided," because it would tend to "diminish the dividends, and to depress the price of "the shares in the market." And we may place beside this statement the words of a witness before the commission, who remarked significantly enough that the division of responsibility between the various shareholders was calculated to increase the evils we have noticed, and that the constant changes of the shares prevented the miners from ascertaining the identity of the adventurers, and fixing the responsibilities of ownership.

---

[226] S., p. v, *Q*. 707.

[227] S., *Q*. 709 and 4902.

[228] P. xliii. *Q*. 3734—41, 3844, 5247, and Accidents in Mines Commission, *Q*. 4297.

[229] Report, pp. xv and xxii and *passim*.

[230] S., *Q*. 4889 and 6120.

[231] *Q*. 4248 and 4249. *Cf*. S., *Q*. 5783.

[232] P. xxii, *Q*. 3134.

So far then as the system of wages in the mines is connected with the absence of a resident employer—and a salaried captain, we must remember, may be but a sorry substitute for a responsible owner—and so far as the formation of an union might enable the men to insist on the provision of such healthy conditions as may prove to be possible, there is some reason for charging to the account of the system a part of the excessive mortality. But it would be manifestly unfair and illogical to make it responsible for the whole.

In the same way we must endeavour to separate the system, as far as justice may require, from the fraud and abuses which have too frequently contributed to make Cornish mining a by-word. It has sometimes been remarked that Cornish mining as a whole results in loss,[233] and that more money finds its way into Cornwall than comes out of that county; and there can unfortunately be no doubt that grave abuses have sometimes attached in the past to the management of Cornish mines, and that they have on occasions presented a favourable sphere of operation to the swindler and the cheat. There is only too much reason to fear that the speculative character which naturally attaches to metallic mining has sometimes been intensified with deliberate and evil intent; and Fawcett, who is said by[234] his biographer to have engaged for a time with surprising success in speculation upon the mining exchange, was very severe in his denunciation of fraudulent speculators.

---

[233] *Cf. Statistical Journal*, 1839, vol. ii, pp. 260—68. In 1837 the miners applied for the abolition of the duty paid to the Duke of Cornwall, and furnished a statement exhibiting a net loss on sixty-eight mines of 60,159*l.* This was, however, it seems, a "peculiarly unprofitable" year.

[234] *Cf.* "Life of Fawcett," by Leslie Stephen, p. 206.

There can be little doubt that the accounts presented at the four-monthly meetings of the "adventurers" may have been sometimes manipulated by the treasurers, or "pursers" as they are called; and legislation which has been recently enacted[235] is directed towards securing greater correctness and more frequent and certain publicity in these accounts.

There can be little doubt again that the reason which is sometimes alleged for the continued working of mines at a loss, has had some foundation in fact, and that some adventurers may have recouped themselves for the constant calls that have been made upon them as adventurers, by means of the sums they have received for the materials—the candles, for instance, and the powder—which they have supplied as merchants.[236] It may have been then to their real advantage that the mines should continue to work at a loss, although the other adventurers without any like compensation have been compelled to respond to constant drains upon their resources. The distinction drawn[237] by Pryce between the "in-adventurers," who lived in the district and often supplied the mines with materials, and the "out-adventurers," who did not do so and resided at a distance, is not devoid of instructive meaning; and the "Mining Journal" of 1836 contained[238] a series of articles directed against the exhorbitant charges of the merchants, while the same paper some half a century later noticed[239] the formation of a dynamite "ring" designed to maintain the price of that material.

The possible extent of this influence may be in some degree measured by the space occupied by merchants' bills in statements of account. At Dolcoath for example on 6th December, 1886, it was reported[240] that the total expenditure for the previous twelve weeks amounted to 19,413*l.*; and out of this sum 5,572*l.* were spent on merchants' bills, as against 11,607*l.* on labour, and 1,673*l.* on tribute. At Wheal Kitty during the sixteen weeks preceding

---

[235] *Cf.* "Western Morning News," 31st December, 1886; "West Briton," 17th September, 1885, and 3rd January, 1878. The Stannaries Act of 1869 provided for the keeping and presentation of regular and correct accounts. But it attached no penalty to neglect of the provision, and in some cases the meetings themselves seem to have been postponed for fraudulent ends. (*Cf.* S., *Q.* 73 and 77.) The Stannaries Act of 1887 contains express provisions for effectively securing these desirable objects.

[236] *Cf.* "Quarterly Review," vol. xxxvi.

[237] "Pryce," p. 174. *Cf.* correspondence in "West Briton," 16th January, 1867, complaining of the presence of merchants on mine committees.

[238] Especially 2nd January and 3rd December.

[239] Ibid., January, 1885. Before a Committee of the House of Commons in 1887 a witness spoke (S., *Q.* 62) of the "gentlemen who supply machinery to "mines" living "in Cornwall and Devon," and a captain said (*Q.* 657—62) that his own son sold materials to the mine of which he was agent, although indeed he added (*Q.* 823) that his position in this respect was "exceptional."

[240] "Western Morning News," 7th December, 1886.

3rd December, the total expenditure amounted to 3,442*l.*, and this sum included an item of 978*l.* for merchants' bills.[211]

The operation, again, of the "cost-book" system, by which it has been difficult, if not impossible, for an adventurer to ascertain the exact value of his share at any particular time, because on the one hand his liability has been unlimited, and on the other he, or one of his fellow adventures, has had the power of relinquishing his share at any moment, seems at first sight to have been peculiarly exposed to fraudulent devices, and to have necessarily tended to heighten the speculative nature of the industry. It must not however be forgotten that the system is connected theoretically with the practice of frequent meetings, and that thus—unless this latter provision be violated—the liberty of action of the purser is controlled, and the risks of unlimited liability are appreciably lessened.

By itself, however without any such adventitious accretions, metallic mining is proverbially a lottery, although the lapse of time and the growth of knowledge have to a large extent replaced the divining rod and mere rule of thumb by experience and foresight. Attention has been recently drawn to the action of a French syndicate in the tin and copper markets. For a time that syndicate was conspicuously successful in raising the prices of those two metals; and indeed it appears that the general rise of prices which seemed towards the close of 1887 to indicate a recovery from the steady fall of the previous thirteen years, was due in no small measure to the sympathetic effects produced upon the prices of other articles by the manipulation of the tin and copper markets. But the sudden and excessive rise in tin thus produced has been followed by an equally sudden and excessive fall; and the brief period of a single month has witnessed a drop in prices from 166*l.* to 86*l.*

Nor is this history without its parallel in Cornish mining. The famous tin corner of 1871 and 1872 was accompanied by similar phenomena. Then, as now, there were rumours of "most "unaccountable transactions in the market;" then, as now, it was reported that the market was "greatly disturbed by the operation "of speculators;" then, as now, we heard of the tin supplies going "into strong hands" "well accustomed to manipulate the market "to their own advantage." But it was also the case then, as now, that an extraordinary rise was followed by an excessive fall. Then, as now, the supplies of tin were increased; and the Australian discoveries, assisted by the emigration of miners from Cornwall, severely tested the endurance of Cornish mining through the weary years of depression which followed.

---

[211] "Western Morning News," 4th December, 1886.

It is worth while to recall a few of the more salient points of the history of that famous episode of 1871-73. In December, 1871, the London "Economist" noticed, as one instance of the "great rise" in the price of commodities by which the year had been marked, the fact that in January tin was selling at 137*l.*, and in December at 157*l.* The "Mining Journal" of the same date pointed out that the shares in the Devon Great Consols mine had advanced during the year from 90*l.* to 140*l.*; those in the Cook's Kitchen mine from 18*l.* to 45*l.*, and those in the Carn Brea mine from 18*l.* to 50*l.* The "Times" of the 2nd December declared that tin mining was "going ahead at a tremendous pace;" and by the close of the following year the "Mining Journal" was able to assert that the tin standard had advanced rapidly to an almost unprecedented figure. The "excitement" prevailing in Cornwall itself was characterised as "feverish," and a local paper stated that opportunities for dealing in mining shares were presented in hitherto unfamiliar quarters of Cornish towns.

But this year of 1872 was one of general abnormal good fortune. It was a year at the beginning of which Mr. Childers had described the commercial position of England as unprecedentedly prosperous, and had said "that he had failed to find even a farmer "who grumbled." "It did not require," remarked the "Mining "Journal" at a later time, "any very great degree of penetration "to discover that things were too good to last, and that the "unreasonable excitement must give place ere long to an equally "unreasoning depression." And accordingly the year 1873, which called forth at its opening the observation that it was long since a new year had opened so auspiciously for the mining interests of Cornwall, was marked at its close by a drop of 24*l.* in tin, attributed in a large measure to the effect of the considerable Australian discoveries.

Even however in comparatively normal times—without the action of either corners or syndicates—we find such cases as that by which the market value of Dolcoath was said to have advanced some 273,138*l.* in a single year; and in the same year—that of 1886—the aggregate value of all the Cornish mines was stated to have increased to the extent of three quarters of a million. One year the newspapers despondently declare that there is only one dividend-paying mine west of Camborne, and not one east of Redruth; in the very next year they jubilantly exclaim that "Cornish mining is in a better position than it has been for many "years."[242]

This speculative character presents opportunities for fraud, and tends to promote indifferent finance. The adventurers are in a similar position with regard to economic prudence to that in which, as we have seen,[243] the tributer is placed with reference to thrift. Even without any conscious dishonesty the mines, if we may credit the statements of local newspapers, have been too frequently worked on unsound financial principles. In some cases it seems that almost every penny of available money—and sometimes too it is to be feared of money which is not strictly available—has been divided at the periodical meetings, and little, if any, set aside to meet unforeseen contigencies. Nor is it without significance that attention has recently been called in Cornwall to the high charges imposed for banking accommodation; and that the failure of Tweedy's Cornish Bank in 1879 disclosed the existence of large over drafts to the mines.[244]

---

[242] *Cf.* local papers of 1885 and 1886. *Cf.* for corresponding change in the opposite direction, "West Briton," 14th June, 1867.

But we must dismiss these abuses from our minds when we are considering the system of wages. Nor again must we be drawn away by the controversy which has recently arisen around the questions of royalities and the leases of mines. Here once more there *appear* to have been grievances, and here too remedial legislation is proposed. The incident of the payment of a large fine[245] on the renewal of the lease to Dolcoath has brought the question to the front; and complaints have been raised about the brief duration of the leases and the payment of royalties. It has been urged[246] that the leases should run for a longer time than twenty-one years, and that the dues to the lords[247] should be paid on profits alone. Royalties and mine leases are then a burning question; but they are not the question with which we are at present concerned.

To a certain extent another abuse, which is intimately connected with the speculative character of the mines, is relevant to our subject. Some local discussion recently arose on the question whether greater effect should not be given to the provision of the Stannaries Act of 1869,[248] that the wages of the miners should constitute the first charge on mining effects; and complaint has also been raised from time to time about the disposal of the monies of the miners' clubs. These, it has been urged, should be regarded as the property of the men, and not of the adventurers. Before Lord Kinnaird's commission, however, evidence was given[249] which tended to show that separate accounts of the club money were "not always kept," and that in the event of the abandonment of a mine the club funds were "added" to the general assets and "divided among the adventurers." By more than one witness indeed the practice was justified on the ground that a deficit in the club money would have been similarly made up from the general account, and that a just distribution among the several contributors would have proved practically impossible.

---

[243] *Supra*, sec. iv.

[244] *Cf.* "West Briton," 13th February, and 27th March, 1879; "Daily "News," 8th January, 1879.

[245] *Cf.* Royal Commission on Housing of Working Classes' Report, *Q.* 8051, 8164, and 8165, and "West Briton," 24th December, 1885. The sum said to have been asked at first was 98,000*l.*, then 45,000*l.*, and finally 25,000*l.*

[246] "West Briton," 17th September. It is curious that as far back as 1814 Mr. Taylor declared that the "mode of levying dues on the gross produce" tended "to discourage enterprise." "It seems reasonable," he added, "that the land-"owners should contribute something in favour of that exertion which so often "leads to their great advantage;" and he therefore advocated some mode of assessing dues, if possible, "in some proportion to the *net profit*."

[247] "The owner of the fee simple who grants the lease for mining purposes is "locally known as a lord," "whether it be a manor or whether it be not" (S., *Q.* 65). The dues may vary from "one-eighteenth to one-thirtieth" of "the "value of the ore actually sold" (S., *Q.* 176—79, and 5763 and 5764). In "some "recent leases" a "small annual rent" is also introduced, but this is so small that it really "merges in the dues" (S., *Q.* 198). At Dolcoath these dues amounted for the twelve weeks prior to 6th December, 1886, to 2,219*l.* on 33,290*l.* realised by 556 tons 16 cwt. of tin (*cf.* "Western Morning News," 7th December, 1886).

Now there can be little doubt that the probability that the miners might be deprived of their wages,[250] and the practical certainty that they would lose their club money in the event of the failure of a mine, were in some degree connected with the system of payment. For it must be remembered that habitually the miners have only been paid once a month—or at even longer intervals—and that their wages have generally been a month in arrears. Here again legislation has been proposed[251] and enacted[252] with the object of securing a more frequent payment, and of diminishing the period of arrears. The same legislation naturally lays down also the important principle that the mine club monies shall be held to belong to the men, and not to the mine, supposing that they are contributed by the men, and that the opposite course does not meet with the approval of a majority of their number. A separate account is to be kept of the club money, and this account is to be open not only to the adventurers, but also to the miners, who are invested with the power of appointing auditors and of selecting their own doctors.

The change indeed from a longer to a shorter interval of payment which has thus received the sanction of compulsory legislation, seems, as we have noticed,[253] to be one of the two most striking features in the modern history of the Cornish system. The "Penny Magazine" of 1836 states that at one time the contracts were taken for six months, and M. Jars puts the period in his day at four. The "Penny Magazine" for 1834 says that at that time they were let for two months, and the same journal for 1836 reduces the period then prevalent to a single month. Mr. Laing, however, in 1842 restates it at two months, and so does Mr. Collins in 1875. The evidence again given before Lord Kinnaird's commission showed[254] that in Dolcoath all the work was then let on contract for *one* or *two* months; while in the lead mines of the north the bargains were sometimes taken for a quarter,[255] sometimes for eight months,[256] and sometimes for a year. Indeed, even in Cornwall itself the fact seemed to be that the periods of setting might vary in different mines, for it was also alleged[257] that the tributers sometimes worked for five or six months before they settled their accounts. The periods too of balancing the accounts may differ from the periods of letting the contracts; for at some mines in the north it appeared[258] that the bargain might last for a year, but the men might be paid every month; or again,[259] that the contracts might be let for the quarter, and the men receive monthly subsist, while the balance was paid at the end of the year. In a similar way evidence was given before a committee of the House of Commons in 1887[260] which tended to show that what the men really desired was frequency of payment rather than frequency of setting the contracts. They objected indeed to the "month in hand," and urged that the period of arrears might be reduced to a fortnight, if not to a week; and it need not be shown in any detail that the other system really gives the adventurers the benefit of interest on the money thus withheld; for, should a man wish to emigrate and receive at once what is due to him, he has practically to pay interest, it would seem, to another man, or to the agent, who, like a banker discounting a bill, gives him the present worth of his "month in hand." They also desired that the amount of subsist, which should be given every alternate fortnight, if not every week, should approximate as closely as might be possible to the actual amount of money they had earned; and the Stannaries Act of 1887 makes provision for this, together with a fortnightly subsist, and a fortnight's arrears.

---

[248] This priority seems to have been prejudicially affected by the Companies Act of 1862, and has been restored by the Stannaries Act of 1887 (50 and 51 Vict., cap. 43). *Cf.* S., *Q.* 42, 43, and 56—58, *contra*, *Q.* 4486.

[249] P. xxiv. *Cf.* S., *Q.* 111, 828, 829, 3311, and 4673; *contra*, *Q.* 1130 and 1374.

[250] For instances, *cf.* S., *Q.* 902, 3100 and 3261.

[251] "West Briton," 6th August, 1885.

[252] *Cf.* Stannaries Act, 1887.

[253] *Supra*, sec. v.

But with these alterations it seems that they would be content. The monthly contract in fact allows, as one witness urged, for "an average probability" of good and bad luck; and although in Cornwall, as we have noticed, the time seems to have been generally reduced to a month—or, as it appears, to two months at the Devon Great Consols Mine—yet in the north of England the bargains seem still to be "very commonly" made for two or three months, and during recent years apparently a tendency has even been manifested to let contracts for longer periods to "an intelligent "and steady pair." Sometimes indeed contracts are set irrespective of time. Sometimes too, even in Cornwall, they may last for two or six months, or in the tin streams for one or two years. But sometimes they are taken at "six feet or the month"—on a "stent" as it is called—and in these cases they may end even before the month is complete.

---

[254] *Q.* 8735.

[255] *Q.* 15473.

[256] *Q.* 13475—77 and 17374.

[257] *Q.* 1409.

[258] *Q.* 17374.

[259] *Q.* 16184 and 16185.

[260] S., *passim.*

There can then be little doubt upon the whole that in Cornwall the period of payment has tended in the direction of gradual reduction, and that it may be still further reduced. One witness, indeed, even before Lord Kinnaird's commission, argued[261] that "more frequent payments would be very 'beneficial;'" and another declared—and we shall see the full meaning of this observation later—that he would not "hesitate" to pay tutwork men once a fortnight. The adoption again of the four-weekly month, and the payment of wages thirteen instead of twelve times in the year,[262] seems indeed to have been partly due to the fact that under the old system a calendar month might sometimes mean five instead of four weeks, and might entail upon the men the loss of a week's wages. But the change was also undoubtedly prompted by the consideration that the longer interval of payment implied greater indebtedness to the local shopkeeper; and the attempt made later to re-introduce the old system at the Devon Great Consols mine was met, as we have before noticed, by the unwonted phenomenon of a strike.[263]

But this gradual diminution of the intervals at which the payment of wages is made is, as we have before[264] remarked, and as the statement we have just quoted from the report of Lord Kinnaird's commission indicates, connected with the other distinctive feature of recent history in Cornish mining—the encroachment of tutwork on the sphere occupied by tribute. For, on the one hand, it is in the case of tribute that we can most clearly trace this gradual diminution; and on the other it was stated before Lord Kinnaird's commission[265] that the pay was "not so quick" in tribute as in tutwork.

VIII.—*A Comparison between Tutwork and Tribute.*

It is tribute which exhibits most fully the chief advantages and the main drawbacks of the Cornish system. In fact it may almost be said to possess a monopoly of the disadvantages, while it enjoys a preponderance of the benefits. The tributer is more intimately interested than the tut-worker in the prosperity and adversity of the mine, for his earnings depend more directly upon its shifting fortunes. He is therefore in a more real sense his own employer; for he receives a payment which does not vary with the quantity alone of the work he performs, but also with the quality and price of the ore he sends to the surface. He is placed in a more responsible position, and has greater occasion for the exercise of ingenuity and judgment. And so the system of tribute was characterised by Babbage as especially good; and a witness before Lord Kinnaird's commission declared[266] that almost every active and clever miner, if he was "prudent," became a "tributer."

---

[261] *Q.* 9214 and 10289.

[262] *Cf.* Report of Commission on Housing of Working Classes, *Q.* 8043.

[263] *Supra,* sec. vi.

[264] *Supra,* sec. v.

[265] *Q.* 1406.

But there is another aspect of the question to be considered. For the increase of responsibility in an industry so fluctuating and speculative as metallic mining, implies increased irregularity of earnings.

The tut-worker, it is true, does not receive the same earnings in every case. They may vary according to the hardness of the ground, as a witness stated[267] before Lord Kinnaird's commission. The price per fathom for example may fluctuate between the extreme limits of 7*s.* 6*d.* and that of 30*l.* And in 1873 Mr. Collins maintained[268] that within his own knowledge these different rates were paid for tutwork:—In sinking shafts in soft "killas" the men would receive 2*l.* to 3*l.* per cubic fathom near the surface, and 3*l.* to 4*l.* below a depth of 20 fathoms. In "compact killas" they would earn 4*l.* to 6*l.* near the surface, and 5*l.* to 8*l.* below; and in "fair blasting ground" they would secure 6*l.* to 20*l.* near the surface and 10*l.* to 30*l.* below. For levels they would receive about one-third less in non-blasting and one-half less in blasting ground; and for stoping they would earn from 2*s.* 6*d.* to 5*s.* or 6*s.* a fathom.

But these various rates are probably calculated to result on the average in equivalent earnings. It is different, however, with comparative earnings from one period to another. Here the wages of the men must fluctuate with variations in the fortunes of the mines, and the conditions of supply and demand in the labour market. A combination might indeed succeed for a time in establishing a minimum rate of its own, but the tendency of the public auction must necessarily have been to produce a coincidence between the actual minimum and the lowest competitive rate. The rate then must have been directly influenced by the conditions of supply and demand in the Cornish labour market, so far at least as the men migrate from one mine to another. As Mr. John Taylor remarks,[269] the "price of labour" is caused by the Cornish system "always to bear on the whole a fair proportion to the "demand, combined with the considerations connected with the "varying expenses of living."

---

[266] *Q.* 10344. The agents seem to be chiefly chosen from the tributers (*cf.* S., *Q.* 1789 and 1790); and men do not like to cease being tributers (*cf.* S., *Q.* 1786).

[267] *Q.* 3551.

[268] "Principles of Metal Mining," p. 41.

Sir Charles Lemon, it is true, stated[270] in 1838 that in places only a few miles distant from one another, wages might differ widely, and might continue to differ for a long period. And he said that this phenomenon was only to be explained by the "known fact of the attachment of the Cornish miner to his own "home." He illustrated this point by the following table, which showed the average monthly wage in different districts in 1837:—

TABLE XI.

	West of Penzance.			Midland District.			St. Austell.			Average.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Tributers	2	7	6	3	8	–	2	19	–	2	18	2
Tut-workers	2	5	–	2	17	2	2	19	–	2	13	8
Dressing labourers	2	2	–	2	1	–	2	5	–	2	2	8

With this table we may compare another which is based upon figures supplied to Lord Kinnaird's commission:—

TABLE XII.

	Providence.			Huel Margery.			Huel Beevor.			N. Levant.			Average.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Tut-workers	2	19	3	2	13	4	2	19	10	3	–	9	2	18	3
Tributers	3	11	3	3	8	–	3	6	10	3	9	9	3	8	11

Before the commission again a witness declared that the men preferred to stay at home rather than migrate, and he added the remark that it was precisely this practice which prevented the equalisation of the wages of the whole district. This local attachment, indeed, is said by a writer in the "Leisure Hour,"[271] to have followed the Cornish emigrants to America, and even in Colorado one mine will be frequented by St. Just men and another by Camborne men, while the men from Redruth and St. Agnes will resort respectively to a third and a fourth.

This feeling, however, merely narrows the area within which the influences of supply and demand are comparatively unfettered;

---

[269] "Geological Transactions," vol. ii, p. 307.

[270] *Statistical Journal*, vol. i, p. 73.

[271] 1877, pp. 169, &c. *Cf.* K, *Q.* 9172 and 9173.

and it may be the case that the extensive emigration of the past twenty years has lessened the *vis inertiæ* resisting local migration. The Cornish miner was described by Mr. John Taylor in 1867 before a committee of Parliament as a "very moveable com-"modity;" and the reports of the two doctors appointed by Lord Kinnaird's commission might be cited as supplying evidence of not a few cases[272] where men had worked in the course of their lives sometimes at two, sometimes at five or six, different mines. On the other hand however it must be admitted that so recently as 1884 a witness before the commission on the Housing of the Working Classes declared[273] that the unwillingness to migrate was still a noticeable fact, and that the men "generally" "stuck" to a single mine. But the evidence before this commission was conflicting, for another witness described the miners as a "very "migratory population." A similar conflict of opinion may be found in the report of a Parliamentary committee of 1887. One witness speaks[274] of the "habit of the miners constantly to shift, "both from Cornwall to and from other counties, and in Cornwall "from one mine to another." But elsewhere he admits[275] that there are "undoubtedly" "cases of men in Cornwall, and plenty "of cases," "where men work for years in the same mine." Another witness describes[276] the men as "principally shifting," but "not so much," he adds, "from one mine to another, as going "to America, and going abroad." "They go to America," he remarks, and "back again in a very short time." In another place however he also states[277] that men are "always coming and going "in mines," and argues that it is exactly this constant migration that guarantees the fairness of the periodical auction. And yet, despite of these facts, it seems to be still the case that a marked difference of wages exists betweeen east and west Cornwall.[278]

The rate of wages must vary also with the vicissitudes of fortune and the lapse of time. A comparison of the two tables we have just given indicates a general advance in the earnings both of tributers and tut-workers. It is true indeed that a witness before Lord Kinnaird's commission declared[279] that the miners "as a "body" were "badly paid;" and even to-day, although more than twenty years have elapsed since this testimony was given, it might be difficult to controvert the assertion.[280] But average wages were nevertheless higher then than they had been in the past, and despite of the alternations of adversity and prosperity to which the mining industry is peculiarly subject, it is the fact that a steady advance may be traced in the rate of wages. In 1837 the average monthly earnings of tributers appear to have been, if we may rely on Sir Charles Lemon's table, about 2*l.* 18*s.* 2*d.*, but by the time of Lord Kinnaird's commission they had risen to 3*l.* 8*s.* 11*d.*, and the wages of the tut-workers exhibit a similar advance between the two periods, from 2*l.* 13*s.* 8*d.* to 2*l.* 18*s.* 3*d.* In 1876 again, Dr. Foster stated[281] the average wages of tut-workers for the four years 1872-75 as respectively 3*l.* 16*s.* 3*d.*, 4*l.* 1*s.* 6*d.*, 3*l.* 13*s.* 7*d.*, and 3*l.* 10*s.*; and, in 1885, Captain Josiah Thomas, addressing the men at Dolcoath, is reported[282] to have put the average monthly wage of his own men at 4*l.* 10*s.*

---

[272] Appendix B, I and II.

[273] Report, *Q.* 8119, *cf. contra, Q.* 8754.

[274] S., *Q.* 275.

[275] *Q.* 307.

[276] *Q.* 510.

[277] *Q.* 887.

[278] *Q.* 1319 and 4041.

[279] *Q.* 3578.

[280] *Cf.* "Daily News," 8th January, 1879.

Any unexpected variation, we must also remember, that arises in the nature of the ground after the bargain has once been made will affect—prejudicially or otherwise—the earnings of tut-workmen,[283] and will therefore introduce another element of fluctuation into their wages beyond those we have already noticed. "You set a "price," says[284] a witness before Lord Kinnaird's commission, "according to what you think the men ought to have a fathom, or "what they ought to drive in the month." "If," however, he adds, "they do not work, or the ground proves unfavourable, of course "the men do not get what you calculate upon;" "but nine times "out of ten they do get their 3*l.* or 3 guineas a month." Pryce, indeed, significantly states that in his day, if the ground turned out badly, the labourers abandoned the tut bargain,[285] and that in some mines a system of forfeits, of which he personally did not approve, had been adopted expressly to meet these contingencies.

Under that intermediate "kind" of tribute which we have before described,[286] a similar method of calculation is pursued; and indeed this appears to be also the case under the full form of tribute itself. So far as the knowledge of the captains goes, the contracts are let at a price which results in the average wage of the district. "The agents go down," as a witness before Lord Kinnaird's commission described,[287] they "calculate the number of "tons which they think the men can break in a month," and the worth per ton of the ore thus broken. They then estimate the labour at the rate of 1*l.* per week per man.

And so it may be the case that the following table, which gives some of the different rates of tribute reported in local newspapers[288] in 1885 and 1886, may really indicate an equal average rate of earnings:—

---

[281] "Report of H.M.'s Inspectors of Mines," 1876.

[282] "West Briton," 19th November, 1885.

[283] K, p. xxiii.

[284] *Q.* 10106. *Cf.* also *Q.* 19182 and 2451.

[285] This is not unknown now. S., *Q.* 220—22.

[286] *Supra*, sec. v.

[287] *Q.* 2240. S., *Q.* 218 and 871.

[288] "Western Morning News" and "West Briton."

TABLE XIII.

Mine.	Date of Report.	Number of Pitches.	Number of Men.	Price in £.	Standard of Tin.
Wheal Peevor	May 1, 1885	11	—	11*s.*	
„	Nov. 6, „	33	58	9*s.* to 13*s.* 4*d.*	45*l.* per ton
„	Dec. 10, „	10	27	11*s.* to 12*s.*	
West Seton	„ 17, „	6	—	11*s.* to 13*s.* 4*d.*	
Killitreth	April 2, 1886	12	28	12*s.* 6*d.*	
Wheal Basset	Oct. 8, „	22	64	6*s.* to 13*s.* 4*d.*	50*l.* per ton

Nor must we overlook this possibility when we read in the "Penny Magazine,"[289] that the earnings of tributers exhibit such variations that where the ore is rich the tribute may be 6*d.* or 1*s.* in the £, while it may amount to 15*s.* or 16*s.* where the ore is comparatively poor.

But, when we have made full allowance for all these facts, we have still to admit that the fluctuations in the earnings of tut-workers are less than those in the earnings of tributers. It is true indeed that the tributers may perhaps be said to enjoy in one respect at least an advantage over the tut-workers. Before Lord Kinnaird's commission they were said[290] by a witness to be more healthy, because they worked in the places which had been more thoroughly ventilated. "In ninety-nine cases out of a "hundred" they were working in ground which had, comparatively speaking, been "opened up" by means of winzes and levels. "The air," remarked another witness,[291] was "not so bad" when he was working on tribute as it was when he was engaged in tutwork. "The majority of the tributers," another declared[292] work under "good conditions," "as far as the air is concerned." And lastly, the commissioners themselves similarly report[293] that "the prospect of gain may induce the tributor to overwork "himself; but it is obvious that the occupation of the tut-work-"man is more unhealthy, as he is more frequently employed where "the air is noxious."

On the other hand, as this quotation shows, and as one witness alleged, the tributers "overwork themselves." Indeed there is even some ground for arguing that the tut-workers on the whole enjoy a greater duration of life, because the tributers work harder, are longer underground, and command a more uncertain livelihood.[294] They can, it is true, take their own time for their work;[295] but the complaint commonly raised by trades unionists against piece-work—that it presents powerful inducements to the men to overstrain themselves—applies with considerable force to tribute, and is certainly more applicable to it than it is to tutwork. Should a pitch turn out better than was expected when the bargain was struck, the men are naturally eager to make the most of their opportunities. On some occasions they appear to have worked for sixteen hours without interruption; and cases have been known where their food and their drink have been taken down to them underground.[296] Nor must it be forgotten that the irregularity of their earnings is likely to exercise some influence on the average duration of life; though it must indeed be admitted on the other hand, that one witness stated[297] before Lord Kinnaird's commission that there was not much difference in length of life between tributers and tut-workers, and the evidence we have quoted above seems on the whole to incline in favour of the tributers.

---

[289] 27th December, 1834. [290] *Q.* 5358. [291] *Q.* 1068.
[292] *Q.* 3466. [293] P. xix. [294] *Q.* 4071 and 4676.
[295] *Q.* 4008 and 8402.

It is true, again, that the tributers appear from the tables we have given before[298] to secure higher earnings, and a witness declared[299] before the commission that in any calculation of wages the insertion of the wages of tributers would "considerably" increase the average wage. It is true also that evidence given before the same commission tended to show that, unlike the tut-workers, they were not always subject to the month's arrears, and that, in some cases, they enjoyed a superiority in the matter of subsist.[300] "We give no subsist to tut-workers," declared[301] one witness, but we "professedly" give it to tributers. Sometimes indeed, it would seem, this allowance of subsist may eventually prove a "bad debt" for the mine; for the men to whom it has been advanced may, through their own misfortune, or the leniency of the captain, never repay it;[302] and, as a matter of fact, a witness before a Parliamentary committee of 1887 alleged[303] that "nearly "the whole of the debts due to the companies in Devon and "Cornwall" arose from the practice of "giving the men more "subsist than they had actually broken ore."

In most cases, however, it appears that subsist would not be advanced if the captain thought that the work done by the miner would bring little or nothing into the pockets of the adventurers;[304] and from this point of view it is clear that the tributers may conceivably suffer under a disadvantage, rather than enjoy an advantage over the tut-workers in the matter of subsist. The allowance of subsist, indeed, although it seems to be so common[305] that it may be regarded as the general rule, is yet theoretically dependent upon the opinion of the captain;[306] and in many—if not most—cases, it is only granted on an express application.[307] This is made by the men on pay-days alone, "except on very special "occasions;"[308] and before a Parliamentary committee of 1887, a miner urged[309] that the men felt some repugnance to making the request, because, as he expressed it, it was tantamount to "plead-"ing poverty," and entailed an unpleasant explanation of their private affairs.[310]

---

[296] *Q.* 8463—67.

[297] *Q.* 4667.

[298] *Supra*, Tables XI and XII.

[299] *Q.* 2352. S., *Q.* 1172—74, especially copper tributers. *Cf. Q.* 370.

[300] *Q.* 9072 and 8810. *Cf.* "West Briton," 24th September, 1885. S., *Q.* 3331, *contra*, 2203.

[301] *Q.* 9072 and 9216.

[302] S., *Q.* 39.

[303] *Q.* 1259.

[304] *Q.* 422—24, 438, 1991—94, *contra*, *Q.* 1297.

The provision of subsist, together with the existence of a practice by which a tributer could abandon a pitch[311] if it proved irretrievably bad, throws an important light upon the extent and consequences of the irregularity of his earnings. Cases indeed are recorded[312] where men have made by a stroke of "unusual" good luck 900*l.* or more in two months. Sometimes they may earn 40*l.* or 50*l.* in a month;[313] but sometimes they may earn less than 2*l.*, and sometimes the price of tin may be so low that a local newspaper may declare[314] that the tributers "find that they cannot " make a living at all." " Should a lode turn out poorer than was " expected," Lord Kinnaird's commissioners remark,[315] "a tributer " will work for weeks and perhaps months without earning any-" thing." " The rate of earnings in tribute," declares[316] Mr. Taylor, is "extremely uncertain," and "the employment is consequently " speculative in a great degree." And in his turn Pryce similarly maintains[317] that the practice of "stoping by the fathom" is " productive of more certain wages to the men and larger quantity " of ore to the owners."

It can scarcely be doubted that the irregularity of earnings we have just been discussing has contributed towards the diminution in the number of instances where tribute prevails. But the avoidance of irregularity has hardly been possible without a decrease in responsibility and independence; and this decrease has implied a greater frequency in the payment of wages. The coincidence therefore between the decline of tribute and the diminution in the intervals of payment can scarcely be termed accidental; and a more direct connection between the two changes has yet to be emphasised. For the system of tribute, as Mr. Taylor remarks, calls for greater calculation, and requires "more complicated" accounts. Payment then cannot be made with such rapidity as in tutwork, and the practice of a month's arrear has in this circumstance at least a plausible basis.

---

[305] *Q.* 235, 1259, and 1642.

[306] *Q.* 301, 614, 1991, 2990, 3202, 4108, and 4769.

[307] *Q.* 614, 2080, and 4106. [308] *Q.* 1642. [309] *Q.* 2065.

[310] Once it would seem that the amount of subsist was fixed by custom; now it appears to fluctuate (*cf.* S., *Q.* 4104).

[311] *Cf.* S., *Q.* 1344. [312] K., *Q.* 10510. [313] Ibid., *Q.* 2354 and 2451.

[314] " West Briton," 10th July, 1885. *Cf.* S., *Q.* 2034. [315] P. xxiii.

[316] " Geological Transactions," vol. ii, p. 320. [317] P. 192.

And thus a witness before Lord Kinnaird's commission[318] stated that the tribute accounts took a month to make up, but the tutwork accounts might be finished in half that time; and the testimony of captains and miners alike before a committee of Parliament in 1887 went far to confirm the statement. An interval, they argued, might indeed be required, even after the tutwork contract had ended, for the place to be surveyed;[319] and it might be the case that some time and labour were needed before the work was satisfactorily completed to the "true point," or—in mining phraseology—duly "squared up." The levels, for instance, might not be sufficiently wide, or might depart too much from the strict horizontal;[320] and hence, should the periods of settling be made too frequent, the mine and the miner might both lose[321] time in ascertaining and supplying these and similar defects. Nor again, they contended, should it be forgotten that a miner cannot break so much if the surface is "smoothed" as he can if it is broken and rough.[322] This "smoothing" and "squaring up" it must, however, be said, was declared[323] by one witness to be an old, and not an existing, practice; and the difficulty, it seems, might possibly be met by a rough measurement of the work,[324] although even here it is true that time would be lost, as, partly for purposes of ventilation, the work of blasting is suspended when the agents go down.[325]

But, however brief be the period needed in tutwork to adjust the accounts, and however minor be the real difficulties in the way of a fortnightly, if not of a weekly, payment, the general tenour of the evidence given before the committee showed that a longer time was required in calculating the earnings of the tributer.[326] In the case of copper mining this difficulty was especially marked, for here the ore had first to be sold at the periodical ticketings,[327] and the process of assaying was more difficult and elaborate.[328] But even this obstacle might, it seems, be removed by fixing the price—as indeed is sometimes done—at the commencement of the contract,[329] or by resting content for the time with a rough calculation[330] and ascertaining and paying the exact balance at a subsequent date.[331]

---

[318] *Q.* 7860.
[319] *Q.* 610 and 1983.
[320] *Q.* 237 and 1523.
[321] S., *Q.* 1000.
[322] *Q.* 1248.
[323] *Q.* 2229—31. *Cf.* 2940.
[324] *Q.* 1503—06, and 2164.
[325] *Cf.* evidence given before the committee.
[326] *Q.* 414, 1635, 2178, 2611, and 5746.
[327] *Q.* 1171.
[328] *Q.* 1423, 1732, and 2627.
[329] *Q.* 1314 and 3139—41.
[330] *Q.* 2629, 3027, and 3216.
[331] *Q.* 5296 and 5297.

At any rate a period of a fortnight appears[332] to be generally regarded as an adequate interval; and in America—where the tributer is termed[333] a “scrammer”—the men seem to be paid the whole,[334] or nearly the whole, of their earnings with little, if any, delay.

We must not, however, neglect another reason which may be adduced for the decrease of tribute; and that is the growth of knowledge on the part of the captains. Metallic mining is no longer to the same extent the hap-hazard pursuit of signs and tokens—deceptive or otherwise—that it once was. The days of the divining-rod—or, as it has been termed[335] in Cornwall, the “dowsing rod”—are over; and mere rule of thumb is being replaced by a body of scientific experience. By dint of long practice the captains are now better able to estimate the probable yield of the various particular portions of the mine. Twenty years ago even, at the time of Lord Kinnaird's commission,[336] it was said that this increased intelligence of the mine agents, and their “ability in judging of the quality of the lode before striking a “bargain,” was causing the instances of unusual and unexpected gain on the part of the tributer to be “of rare occurrence.” And therefore if a “rich lode” were “discovered,” it was “frequently “worked by tutwork.” This change has since progressed, and appears to be still progressing.

There is no longer the same opening for speculation, and the speculative contracts have diminished in number. The tribute system, it must be remembered, produces on the whole a general concidence between the interests of the miners and those of the adventurers; but it has also some tendency to make it the temporary interest of the tributer to get the better of the captain in the periodical bargain, and to prevent him from knowing the genuine prospects and real condition of the pitch. At a time when there was so much of uncertainty and speculation in the probable yield of particular portions of the lode, this object—even in the teeth of establish rules—might have been effected with comparative ease, and might on the whole have resulted as often in loss to the miner as in loss to the adventurers. But now that the captain has more certain knowledge on which to proceed, he is able to enter into a definite arrangement with greater confidence; and he, like the miner, seem to prefer assured conclusions to uncertain chances, regular returns to irregular gains, and therefore avoids speculation.

---

[332] *Q.* 412, 1059, and 1634.

[333] *Q.* 2413, 2504, and 2520.

[334] *Q.* 1950 and 5431—33.

[335] Pryce says of it, “I am well convinced of its absolute and unprovable “virtue,” p. 116.

[336] P. xxiii.

IX.—*Conclusion.*

It is true that there are complaints under the new system, as under the old. The captain may be guilty of short sighted imprudence. He may attempt to reduce the terms of a bargain with excessive haste,[337] and may thus put an effective premium upon remissness of industry. In his anxiety not to be "baffled"[338] by the miners, he may engender hostility and distrust. Complaints have been raised also—with or without reason—that prejudice and partiality have sometimes been shown at the periodical survey. The competition, it has been argued,[339] is not perfectly open, but the agents possess and sometimes display a power of excluding a man for some reason or other which may indeed be capable of justification, but may also be prompted by unjustifiable caprice.

The agents again it was urged[340] before a committee of Parliament in 1887 sometimes interfere—to the intentional detriment of the men—with the bargains which they themselves have set. But on the other hand, before the same committee, it was contended[341] that, while it was true that the bargains were "occasioally interrupted," this was done for the purpose of averting some special danger which threatened the mine, or of making some necessary change in the direction of the workings. The contracts might indeed be broken for other causes; but here too in the majority of cases it was[342] when they were turning out amiss for the men and not for the contrary reason.

Another complaint made by the tributers seems to rest on a more substantial foundation. They have argued[343] that the method hitherto adopted in taking the samples of the ores for the purpose of appraising their value has not allowed them sufficient opportunity for checking the results. Hitherto the usual practice seems[344] to have been for the tin stone which has been sent to the surface to be broken to a certain size and properly mixed. Two or three samples have been taken of the mixture, and one of these has sometimes been given[345] to the men; another has belonged to the adventurers, and a third has been left behind for re-trial, should this be necessary.[346] The sample belonging to the adventurers has been assayed, and the men have of course had the power, which they sometimes have exercised,[347] of assaying their own. Should the two results disagree, the difference may be split, or the third sample tried.[348] But in practice it seems[349] that the sample of the adventurers has often been treated as the standard, and that the presence of the men or of a representative in the assaying room has been stoutly opposed[350] by the captains. The men have therefore resolutely contended that the third sample should be sealed,[351] and greater facilities afforded for checking the process of assaying;[352] and they have so far succeeded that provision has been made for these points in the Stannaries Act of 1887.

---

[337] S., *Q.* 1845, 2098, and 5798.

[338] *Cf.* K., *Q.* 3163 and 3550.

[339] S., *Q.* 3461, 3462, and 5936.

[340] *Q.* 3286 and 4127.

[341] *Q.* 215, 216, and 4064.

[342] *Q.* 462.

[343] S., *Q.* 3407 and 4375.

[344] S., *Q.* 473—90.

[345] *Q.* 480.

[346] *Q.* 482.

[347] *Q.* 484, 1176, 1704, and 4802.

[348] *Q.* 489 and 1177.

[349] *Q.* 488, 3417, and 4375.

The new system, then, so far resembles the old that it is not free from defects. Nor must we forget that the "kind of tribute" which has encroached upon the old and simple form, bears some resemblance at least to that form, and exhibits a similar speculative element. These tut-workers, as they are called, who now usually stope by the ton, and not, as seems once to have been the case,[353] by the fathom, approximate indeed, as we have noticed,[354] to the ordinary tut-workers, because their earnings depend in the main on the quantity of the "stuff" they send to the surface, and not so much on its quality or probable price; but they also approximate to the ordinary tributers because the element of quality does, as we shall see, enter into consideration, and the yield and size[355] of the lode cannot even yet be estimated with the same certainty as the nature of the ground through which the ordinary tut-workers sink their shafts or drive their levels.

The two systems indeed of ordinary tribute and this special kind of tribute or tutwork may be said now to resemble one another even more closely than we have just indicated. For evidence given before a committee of Parliament in 1887 shows that in the case of the tributer the price at which the ore is often treated as selling is the price which prevails, not at the time of the actual sale, but at the time when the contract is taken,[356] or in some cases is an arbitrary price selected by the agent himself.[357] It is then for the time a fixed price, and the tributers consequently speculate on the quality of the ore alone and not on its probable price. The tut-workmen, again, who stope at so much per ton, are apparently not paid entirely by weight, for, unless the stuff that they send to the surface attains a certain standard of quality, it is set on one side, and is not placed to their credit.[358] And thus they too, to a certain extent, like the tributer, speculate on the quality of the ore. In one mine for example they have to produce one and a half hundredweight of tin to ten tons of stuff before it is placed to their

[350] *Q.* 497—99.

[351] *Q.* 4054 and 4055.

[352] *Q.* 2396, 2397, 3275, 3276, 3407, and 4234.

[353] *Q.* 5319.

[354] *Supra*, sec. v.

[355] *Q.* 5318.

[356] *Q.* 1314.

[357] *Q.* 1754—58.

[358] *Q.* 242, 243, 449, 895, 1082, 1095, 3826, and 4075.

credit,[359] and strenuous complaints have been raised[360] by some of their number against the practice. It is in part at least for this reason that an urgent request has been preferred for the appointment of an official checkweigher. The men might, it appears, stay on the surface themselves, and see the stuff weighed, and this they have sometimes done.[361] But, like the tributers, who might witness themselves the dressing of the ores,[362] they have lost their wages for the time; and hence it is that a special clause giving the men the power of appointing a checkweigher has been inserted in the recent Stannaries Act.

But while the new system has thus its analogies to the old, it has also its differences; and, however much we may regret the *comparative* decline of tribute, we cannot refuse to acknowledge the potency of the reasons which have tended to produce this result. In this case, as in so many others, the course of events and the movement of economic forces seem to show that regularity of earnings is more important than independence, and that there are abiding elements in the relation of wage-payer to wage-receiver which may offer a strenuous resistance to all the dissolvent influences of co-operative production.

Other changes of equal, or greater, importance may be impending in the Cornish mines. The formation of an union may lead to the removal of grievances—real or imaginary; but it may also result in the abandonment of the periodical auction. For, despite of the indications afforded[363] by writers of the occasional presence in former times of a tacit combination among the men—a combination which Mr. Taylor declared was effectually met by the policy of a "reserve-price"—there can be little doubt that the essential basis of the public survey is independent individual competition. It is not indeed without significance that in the lead mines of the North Lord Kinnaird's commission discovered[364] in the majority of cases nothing corresponding to the public survey but only individual bargains; and that in the United States of America, where the census returns of 1880 testify[365] to the presence of tribute in the copper mines, the facts seem to be similar to this. Even in Cornwall itself it appears[366] that of late the system of letting contracts in private has met with adherents. The public auction indeed has not, at any rate in the large mines, fallen into disuse; but the competition amongst the men, which was formerly very keen, is said to be dying out, and they "rarely" attempt to underbid one another. In these days, however, we might regard even this result with comparative equanimity; for the institution of sliding scales and the practice of conciliation and arbitration in the coal and iron industries have conclusively shown that the existence of an union may prove in the end to be, not an incentive to strife, but a guarantee for the preservation of peace.[367]

---

[359] *Q.* 2027. Sometimes it is regulated by a sliding scale. *Q.* 5522.

[360] *Q.* 4284. [361] *Q.* 561 and 1736. [362] *Q.* 416 and 4801.

[363] *Cf. supra*, sec. vi. [364] *Q.* 13031.

[365] United States Census, vol. xx. "Copper Mining," p. 246. It is instructive to read that in these mines "strikes never occur."

[366] I am indebted for this information to Cornish friends, and especially to the Rev. H. Oxland, Rector of Illogan, and to Captain W. Cock-Vivian, to both of whom I am anxious to take this opportunity of expressing my obligations for their ready and painstaking courtesy. *Cf.* too S., *Q.* 4194, 5940 and 5342.

It would be rash, however, to venture upon any definite predictions of the future course of affairs in the Cornish mines. For the long continuance of the system in the past must always discount the probability of radical change; and we shall be more in harmony with previous precedent if we expect a gradual reform rather than a complete revolution. We have indicated the general directions in which that reform seems to be tending, and with that we must rest content. There is indeed so much that is interesting, and so much that is instructive, in the Cornish system, that we might fain hope that any revolutionary change might be postponed to an indefinite date; and we shall hardly be accused of unwarrantable confidence if we say that that hope is based on the stable foundation of reason and precedent alike.

---

[367] *Cf.* the present author's "Industrial Peace."

The "QUANTITATION" *of* STOCK EXCHANGE VALUES.

By ARTHUR ELLIS, ESQ.

[Read before the Royal Statistical Society, 20th March, 1888.
ROBERT GIFFEN, Esq., LL.D., a Past President, in the Chair.]

CONTENTS:

	PAGE
I.—Introduction	567
II.—Comparison by Percentages	569
III.—Joint Stock Property held in the United Kingdom	573
IV.—Causes of the Movement of Prices	576
V.—Income has not Risen with Market Values	577
APPENDICES A and B	579

I.—*Introduction.*

I VENTURE to use this word "quantitation" as one which will be readily understood by the Statistical Society, if not by the outer world. It is among objects of the Society, while remaining unsatisfied with bald facts or conclusions, or classifications, to find out "how much" and to what extent facts are facts, or, in other words, to test the meaning of facts. "Quantitation," therefore, expresses in one word—which may be an ugly one but is nevertheless a useful word—what we aim at in an investigation before the notice of the Society. (There is the word "quantification," used by writers on logic, including Sir William Hamilton, applied to the predicate. I remember a student of logic calling this word an invention of the enemy for the confusion of the understanding. Precisely because it applies to logic and not to statistical facts, I am disinclined to use it, and it contains one more syllable which, although one more or less among so many may seem to be no matter, is a disadvantage.) In comparing the prices of Stock Exchange securities at different periods, the object of this paper has been to make up something like the Index Numbers formulated by the "Economist" from year to year, but if possible, more completely. For instance it has been the endeavour to give proper prominence to important securities, and to allow the minor departments to sink into their due insignificance or inferiority. The means of doing so are at hand in the Stock Exchange Official List, which shows against each quotation the quantity of each security dealt in. Of Consols we find there were, in 1884, 330 millions, of London and North Western Railway Stock about 38 millions, while the speculative shares of which we hear so much daily in the money articles of newspapers are often of quite trifling amounts in comparison with important securities of this nature. Some time ago the dealings of the Stock Exchange appeared to be centred in one or two companies' shares, those of the Brush Electric Light among the number, and a good many fortunes were transferred from hand to hand in the course of betting on the rise and fall of Brush shares. So in succession with Bryant and May shares, Guiness's, Chatham

Railway ordinary stock, Brighton "A" stock, De Beers Diamond shares and other counters, whose importance is little greater in proportion to the mass of property represented by securities, than the winner of the Derby or the stakes of a prize fight. It is here attempted to rectify the sense of proportion which may be distorted by the undue attention given to "lively" stocks enjoying speculative favour.

Summary Table. Market Values. [000's omitted.]

Nominal Amount, Par Values as in 1884.	Securities by Groups.	End of Years					End of February,
		1880.	1884.	1885.	1886.	1887.	1888.
£		£	£	£	£	£	£
800,194,	15 British and Indian funds .	808,872,	811,215,	805,899,	814,744,	818,579,	825,887,
36,378,	8 Corptn. United Kingdom stocks	37,238,	37,597,	37,644,	37,623,	38,576,	39,398,
49,416,	11 Colonial Government stocks	50,199,	49,886,	51,069,	50,211,	51,920,	52,475,
21,375,	4 Colonial inscribed stocks	19,886,	21,103,	21,409,	20,942,	21,397,	21,817,
907,878,	30 Foreign Government stocks	740,726,	746,401,	742,672,	765,506,	757,818,	759,703,
201,166,	19 British railway ordinary	265,116,	245,008,	242,559,	245,524,	259,619,	254,217,
116,486,	14 Ditto debenture	134,318,	138,793,	140,810,	140,882,	146,693,	149.581,
105,616,	12 Ditto preference	121,415,	125,513,	127,273,	128,301,	131,774,	134.404.
50,385,	5 Indian railway ordinary	66,581,	65,983,	65,880,	67,086,	70,484,	69,761,
56,014,	8 Railways in British possessions	37,675,	21,799,	23,495,	27,412,	26,148,	24,915,
93,057,	11 American railway shares	95,554,	51,583,	64,909,	72,963,	69,910,	68,853,
51,533,	11 American rail. bonds (currency)	50,475,	33,529,	42,532,	47,609,	45,449,	45,772,
10,742,	5 American bonds (sterling)	10,565,	9,664,	10,509,	11,894,	12,409,	12,282,
16,910,	11 Foreign railways	17,427,	16,458,	15,750,	18,286,	18,700,	18,932,
83,261,	6 ,, obligations	47,927,	51,804,	53,842,	53,297,	49,875,	51,103,
37,419,	33 Bank shares	76,573,	77,573,	75,585,	75,820,	76,215,	75,210,
7,038,	8 Corptn. stocks col. and foreign	8,157,	8,366,	8,585,	8,375,	8,327,	8,303,
9,752,	14 Land and financial investment	10,825,	10,585.	10,520,	11,352,	11,171,	10,978,
10,842,	4 Gas	19,883,	23,462,	25,270,	25,280,	25,878,	25,402,
4,258,	18 Insurance	18,638,	16,895,	18,289,	20,429,	19.943,	20,182,
6,758,	8 Coal, iron, and steel	7,039,	5,048,	5,626,	5,900,	5,386,	5,025,
20,716,	6 Canal and docks....	32,821,	39,850,	44,433,	39,968,	40,096,	40,775,
4,857,	20 Commercial and industrial	5,974,	5,291,	6,045,	5,942,	5,706,	5,439,
10,690,	13 Mines (foreign)....	16,135,	10,861,	11,151,	10,057,	15,935,	15,497,
5,316,	6 Shipping	6,175,	5,128,	5,112,	5,084,	5,348,	5,376,
693,	5 Tea (Indian)	862,	787,	860,	902,	903,	897,
17,557,	12 Telegraph and telephone	15,063,	15,020,	15,059,	14,063,	14,726,	15,078,
4,066,	11 Tramway and omnibus	5,649,	6,080,	6,100,	6,440,	5,836,	5,904,
8,553,	10 Waterworks	16,996,	16,075,	16,500,	16,947,	17,366,	17,584,
2,748,927	338 Totals	2,744,764.	2,667,958,	2,695,387,	2,748,866,	2,772,184,	2,780,750

II.—*Comparison by Percentages.*

A philosophical Society like this would doubtless be glad to have formulated for purposes of discussion, a theory of progression by which we might reconcile the movement of wholesale prices of commodities with that of securities. Having the figures handy, we may now proceed to compare, year by year, the quantitative value of securities with the quantitative value of commodities, taking the well-known index numbers of the "Economist" for the latter purpose. The following table seems sufficient for comparison, although it does not point a moral with any sharpness:—

(x). *Prices of Securities and of Commodities Compared.*

Date.	Commodities. "Economist's Index Numbers."	Securities.
		Mlns. sterling.
End of 1880	2,376	2,745
" '84 ...	2,098	2,668
" '85	2,023	2,695
" '86	2,059	2,749
" '87	2,130	2,772

(y). *The same, reduced to Percentages* (*Prices at end of Year* 1884 = 100).

	Commodities.	Securities.
End of 1880	113	103
" '84	100	100
" '85	96½	101
" '86	98	103
" '87	106	104

The compiler may unreservedly confess a feeling of surprise at first at finding the course of the stock markets thus following to some extent the course of wholesale prices. Various authorities—Mr. Goschen, Mr. Giffen, Mr. Charles Gairdner, and perhaps others—have explained that, when prices tend to fall in trade, money is diverted to stocks; and that, given unvaried quantity and efficiency of money, a decline in trade prices must be compensated by a tilt upwards in Stock Exchange values. These arguments convince the reason. How then is it that values of securities had not taken a course opposed to that of trade prices? On examining the various groups in the chief table, it will be seen that those securities which have followed the course of commercial markets are, like railway ordinary stocks, coal and iron shares, &c., dependent for dividends on the state of trade, which in turn is affected by the course of wholesale prices. These must follow the course of trade prices. Groups like British and Colonial funds, railway guaranteed stocks, and the like, bearing fixed rates of interest, move in the opposite direction. Others would move downwards, in connection with declining dividends, if not kept up by the scarcity of alternative investments in a time of unexpanding or slowly expanding trade.

Take *first*, the groups of what may be called trading securities. In railway ordinary stocks there have been two opposite tendencies at work, each nullifying the other; just as there has conceivably been, in the mind of the average shareholder, an impulse to sell stock in view of declining dividends, and a counter impulse to buy or retain stock in view of the difficulty of employing capital in trade. Although the dividends on English railway stocks have declined during the past eight years, there has been no equal decline in the prices of the respective stocks in the market. The following table shows the decline of dividends on representative railway stocks:—

Railway Companies.	Dividends.		Decrease.
	1880.	1887.	
	Per cnt.	Per cnt.	Per cnt.
London and North Western	7⅜	6½	⅞
Lancashire and Yorkshire	5⅜	4¼	1⅛
Midland	6⅛	4¾	1⅜
North Eastern	8¼	5⅝	2⅝
Great Western	5⅛	5½	⅜ (inc.)
„ Northern	5⅛	4⅜	¾
Sheffield	3	1½	1½
Great Eastern	1½	2¼	¾ (inc.)
London and South Western.................	6	5⅞	⅛
„ Brighton	6½	5½	1
South Eastern	6	5⅛	⅞

And, in contrast to this heavy decline in the rates of profits on home railway capital, we find that the market values of railway stocks have taken a very different course, declining at first under the influence of diminishing dividends, and subsequently recovering on pressure exerted by the scarcity of solid investments. The following table reduces the market values of this group of stocks to percentages in the way already adopted in treating the mass of securities, market values at the end of 1884 being still taken as equal to 100:—

Values of 19 *British Railway Ordinary.*

Year.	Mln. £.		Year.	Mln. £.	
1880	265	= 108	1886	245½	= 100
'84	245	= 100	'87	260	= 106
'85	242½	= 99	Feb., 1888............	254½	= 104

The market for American railroad shares seems to be usually under artificial influences, but the fluctuations of the past eight years are similar to those apparent in English ordinary stocks, only far more extreme. In both markets, the lowest point was touched at the end of 1884; in both there has been a subsequent recovery; and the hope of improved dividends has latterly buoyed up each market. The variations from time to time may be marked thus:—

11. *American Railroad Shares.*

Year.	Mln. £.	Year.	Mln. £.
1880	95½ = 186	1886	73 = 141
'84	51½ = 100	'87	70 = 136
'85	65 = 126	Feb., 1888	69 = 134

The group of Coal and Iron companies might have been expected to follow the course of the railway group, but these industries have been peculiarly depressed, and no recovery is so far shown:—

Values of (8) *Coal, Iron, &c., Securities.*

Year.	Mln. £.	Year.	Mln. £.
1880	70½ = 125	1886	59 = 104½
'84	56½ = 100	'87	53¾ = 95
'85	56¼ = 99½	Feb., 1888	50¼ = 89

The same cannot quite be said of the group of commercial and industrial undertakings, whose market values are, on the whole, still above those of the year 1884, although below the best points touched in recent years:—

Values of (20) *Commercial and Industrial.*

Year.	Mln. £.	Year.	Mln. £.
1880	59¾ = 113	1886	59½ = 112½
'84	53 = 100	'87	57 = 107½
'85	60½ = 114	Feb., 1888	54 = 102

Bank shares may be classed in the same category as those already taken, seeing that bank dividends hang on the activity and profitableness of trade; but it appears that the troubles felt in colonial and other producing countries have reacted upon native banks, and so obliterated the effect of the rise which has taken place in the market values of banking shares at home:—

33. *Banks.*

Year.	Mln. £.	Year.	Mln. £.
1880	76½ = 98½	1886	75¾ = 98
'84	77½ = 100	'87	76¼ = 98½
'85	75½ = 97½	Feb., 1888	75¼ = 97

We come next to shipping shares, those taken however being the shares of the larger and more or less privileged passenger services, which have not felt the full effect of the universal competition for commercial freight. In this case the progression has lately been favourable:—

6. *Shipping.*

Year.	Mln. £.	Year.	Mln. £.
1880	61¾ = 121	1886	50¾ = 99
'84	51¼ = 100	'87	53½ = 105
'85	51 = 99½	Feb., 1888	55¾ = 106

And we may take the market for tramway shares, the rise in which has been repressed by the approach of the time when the local bodies have power to take over sections of tramway line without regard to market values based on dividends:—

11. *Tramway and Omnibus.*

Year.	Mln. £.	Year.	Mln. £.
1880	56½ = 93	1886	64½ = 106
'84	60¾ = 100	'87	58¼ = 96
'85	61 = 100½	Feb., 1888	59 = 97

The values of insurance companies' shares, which usually have a tendency to follow the state of trade, have been buoyed up by counter currents, and show remarkable steadiness:—

18. *Insurance.*

Year.	Mln. £.	Year.	Mln. £.
1880	18¾ = 112	1886	20½ = 122
'84	16¾ = 100	'87	20 = 120
'85	18¼ = 109	Feb., 1888	20 = 120

The same may be said of gas and water works, whose position as recognised investment stocks has prevented the decline of values which might have otherwise proceeded from the tendency to economise and to resort to cheap lighting by means of oil lamps. The result has been as follows:—

4. *Gas.*

Year.	Mln. £.	Year.	Mln. £.
1880	19¼ = 82	1886	25¼ = 107½
'84	23½ = 100	'87	25¾ = 106½
'85	25¼ = 107½	Feb., 1888	25½ = 108½

10. *Waterworks.*

Year.	Mln. £.	Year.	Mln. £.
1880	17 = 101½	1886	17 = 101½
'84	16¾ = 100	'87	17¼ = 103
'85	16½ = 99½	Feb., 1888	17½ = 104

We now come to the *second* category, comprising stocks bearing fixed rates of interest, from which it will be seen that at the end of last year there had been a rise of about 4 per cent. upon values current in 1884, followed by a still further advance early this year in expectation of a reduced rate of interest on the National Debt; but the more recent rise in Government and corporation stocks has been largely at the expense of a fall in the values of British funds. The course of colonial Government stocks in the market has been steadily upward, thus:—

11. *Colonial Government Stocks.*

Year.	Mln. £.	Year.	Mln. £.
1880	50¼ = 100½	1886	50¼ = 100½
'84	50 = 100	'87	52 = 104
'85	51 = 102	Feb., 1888	52½ = 105

The values of home railway debenture stocks have risen quite as steadily and still more distinctly, the progression being thus defined:—

14. *Debenture Stocks.*

Year.	Mln. £.	Year.	Mln. £.
1880	134¼ = 97¼	1886	140¾ = 101½
'84	138¾ = 100	'87	146½ = 106
'85	140¾ = 101½	Feb., 1888	149½ = 108

The rise in foreign Government stocks bearing fixed rates of interest has been inconsiderable on the whole, the weakness in European bonds being accounted for by the steadily growing fear of war, while contemporaneous rise in South American stocks, helped by compositions on the part of previously defaulting Governments, has not altogether overcome the effects of political anxieties on values as a whole:—

30. *Foreign Government Stocks.*

Year.	Mln. £.	Year.	Mln £.
1880	740¾ = 99¼	1886	765½ = 102½
'84	746½ = 100	'87	757¾ = 101½
'85	742¾ = 99½	Feb., 1888	759¾ = 101¾

III.—*Joint Stock Property held in the United Kingdom.*

Then, as to the nominal quantities of stocks and shares taken for comparison, it happens fortunately that the amount and value agree very closely with what can be picked out from Mr. Giffen's well-known statistics of the Accumulation of Capital in the United Kingdom. It is useless to go very deeply into the matter, for the amount of bonds, stocks, and shares held in this country is continually varying, and the amounts vary *inter se*. At one time the fashion is to hold bonds, at another the preference is for Registered Stock or Companies' Shares, as the case may be. I am satisfied however that the aggregate taken represents nearly enough the amount of funded joint-stock capital held in this country. I do not say that the proportion of bonds is accurate—indeed one is inclined to think that the proportion of bonds assumed is excessive—but there are no means of testing the real proportions, and therefore the figures can be taken as answering the purpose of comparing the value of the capital in the United Kingdom in one form of Joint Stock Companies and Public Loan Securities. But, it will be said, that the aggregate does not remain steady; that the quantity of securities invested in it continually increases, if their aggregate value does not increase. No statistics can be better for the purpose of showing the variation in the amount of securities admitted officially upon the London market than those published yearly by Mr. H. C. Burdett, in his annual Official Intelligence of Stock Exchange Securities. Going back for some years, we find his aggregates to have varied in the following order:—

Par Values of Securities Quoted in Official List.

	Amount. £		Amount. £
Dec., 1863	1,683* mlns.	Dec., 1884	5,377 mlns.
,, '73	2,270* ,,	,, '85	5,480 ,,
,, '81	5,787 ,,	,, '86	5,676 ,,
,, '82	5,677 ,,	,, '87	5,795 ,,
,, '83	3,643* ,,		

The amounts quoted officially during the past eight years therefore appear to have varied little. Details are supplied at the close of these remarks (see Appendix A). In this place we may compare the amounts quoted on the Stock Exchange Official List at the end of the year 1884—the date taken—with the par values of securities reckoned, in my own tables, for the purpose of obtaining *quantitative* market values from time to time:—

---

* Plus foreign bonds with coupons payable abroad, estimated in the year 1883 at 2,161 millions—together, in that year, about 5,838 millions.

[000's omitted.]

Securities.	Total Amounts Officially Quoted as on December, 1884 (Par Value).	Amounts Taken (Nominal or Par Value).	Number Taken.
	£	£	
British Funds	811,957,	800,194,	15 British and Indian funds
Corporation British	55,511,	36,378,	8 Corp. (U.K.) stocks
Colonial Government	122,285,	49,416,	11 Colonial Gov. „
„ inscribed	51,257,	21,375,	4 „ inscribed stocks
Foreign Government	2,307,459,	907,878,	30 Foreign Gov. stocks
British railway ordinary	248,908,	201,166,	19 British rail. ordinary
„ debenture	163,991,	116,486,	14 „ debenture
„ preference	171,577,	105,616	12 „ preference
Indian railway	77,640,	50,386,	5 Indian railway
Railways (British possessions)	74,484,	56,014,	8 Railways in British possessions
American railway shares and bonds	344,500,	51,532,	11 American railway bonds
		93,057,	11 „ shares
		10,742,	5 „ bonds (stg.)
Foreign railways	80,659,	16,910,	11 Foreign railways
„ obligations	464,212,	83,261,	6 „ obligations
Banks	52,756,	37,419,	33 Bank shares
Corporation colonial and foreign	15,279,	7,038,	8 Corporation stocks (colonial and foreign)
Financial land, &c.	32,481,	9,752,	14 Financial land, &c., Cos.
Gas	24,170,	10,842,	4 Gas
Insurance	11,343,	4,258,	18 Insurance
Coal, iron, and steel	14,681,	6,758,	8 Coal, iron, and steel
Canals and docks	35,031,	20,716,	6 Canals and docks
Commercial, industrial, &c.	24,503,	4,857,	20 Commercial, indust., &c.
Mines, foreign and colonial	19,880,	10,690,	13 Mines (foreign)
Shipping	10,625,	5,316,	6 Shipping
Tea and coffee	1,424,	693,	5 Tea (Indian)
Telegraphs and telephones	31,174,	17,557,	12 Telegraph and telephone
Tramways and omnibus	8,945,	4,066,	11 Tramway and omnibus
Waterworks	11,981,	8,553,	10 Waterworks
Official total (including other securities)	5,376,707,	2,748,927,	Total taken

Foreign Influences on Prices.—London is not the sole stock market of the world, and foreign forces have stept in where London "feared to tread." Berlin especially has taken the lead in promoting the rise of values of Foreign and South American Government Stocks. Experienced brokers have asserted that the hospitality given by Germany to Portuguese and Spanish bonds has added 10 per cent. to their market values, the same with Italian, Argentine, &c., not to say anything of the conspicuous strength shown by Berlin when attempts were made to depress Russian securities in international markets.

Another reason why prices have risen during the past seven years is the cessation of new loans in France since the crash of

1881. Perhaps we might go back further and say that, since the great indemnity loans raised by France in the Seventies there have been no new issues of any magnitude. That is why I start with the year 1880 as a basis of comparison, and it may be here stated that the method of "quantitation" is not good for all time, as, indeed, the Index Numbers of the "Economist" are not quite good. Finance changes as trade changes, and the articles which deserve prominence during one decade sink into comparative insignificance in the following and to some extent *vice versâ*. Twelve years ago, a good many of the securities which now figure on the Stock Exchange List were not in existence, and therefore it would be too much a matter of estimate to go back so far in endeavouring to compare prices. The "articles," to use the historic term of one of the Irish members, for which prices are quoted in the Stock Exchange, have changed by conversion, or redemption, or internal desuetude. The rise of prices during the last seven or eight years represents what may be called an anti-cyclone in the financial world. Instead of crises we have had a time of quietude, not without occasional tremors, but free from great "booms" on the one hand, and crises on the other. The new German "Krach," a term freely used after the depression of 1873-75 to describe the collapse of markets and prices which succeeded the previous inflation, has not taken place yet.

IV.—*Causes of the Movement of Prices.*

The figures as to aggregate market values, from time to time, do the service of showing that a great deal of unnecessary pessimism has been worse than wasted for several years past. A great deal of unnecessary dirt, in fact, has been thrown at borrowing governments and borrowing corporations. The public have been continually and indiscriminately bidden to take care, and it would seem as if part of the public could keep nothing steadily in view but the foreign loan scandals, and the collapse of Turkey and Peru as borrowing Governments ten or twelve years ago. It is possible that these warnings have ceased to have any effect, but some effect they must have had in the course of the past seven years, when many good borrowers have been warned off the London market, and have had to do the best they could in Berlin, Frankfort, and even in New York. The values of the accepted securities already on the market tended to rise all the more rapidly. Another effect of the cautions which have been squirted upon nearly all issues good, bad, and medium in class, has been a most deplorable one. Subsequent speculative inflation is in part attributable to previous pessimism. Gold, Biscuits, Matches, Copper and Diamonds have each had a "boom," which would hardly have been possible but for the reaction against over sobriety.

The reasons of the rise in market values—in conventional valuation—may be thus summarised: 1, a cessation of the supply of new securities recognisable by the Stock Exchange; 2, continued accumulations of capital diverted from trade; 3, the growth of capital and financial power in Germany and elsewhere.

V.—*Income has not Risen with Market Values.*

The quantity of stocks marketable in London, and of international stocks marketable indifferently in London and on the Continent, appears to have diminished in comparison with the much greater increase in the resources available for new loans. The result would naturally have been a pressure upon the values of those which have already effected a footing in the great markets for public securities, and this we find to have been the case unmistakably. But a further result has been that, while the capital values of public securities have on the whole risen, the return in the rate of interest or dividend per cent. derived from investments in the mass of securities has during the same time diminished. There have been accidents of trade also, diminishing the rates of dividend from various railway and industrial undertakings in this country, but I do not propose in the present paper to undertake an investigation into the return to investors or to calculate the falling off of revenue from investment in public securities. Taking stocks bearing fixed interest, such as Colonial and Foreign Government bonds, we find that capital value has increased, and an easy calculation will show roughly that, if the buying price of a mass of stocks, bearing the same aggregate interest as before, has increased from 100 million £ to 110 million £, the return in the way of interest on those stocks is no longer 4 per cent. but only a little more than 3½ per cent. per annum.

Most investors will agree that this effect has been realised. Superficially, the world seems full of capital, and every year's enterprise in the way of laying new railways, or making loans to those Governments and corporations which undertake the improvement of reproductive public works, has had the effect of intensifying competition between companies and countries. We have lavished capital upon America and other distant countries, and the more we have gone into new operations of the kind, the more the countries and corporations nearer home have suffered. Half-bankrupt undertakings are those which do most mischief. In America they not only grow wheat for consumption in England, but are rapidly coming to manufacture the wheat into flour, and the tendency is for distant countries to prepare almost everything ready for the consumer in England. For instance, it is said to be possible that we may have hot rolls for breakfast from Chicago or St. Louis in course of time; in that case milling and baking at home might be extinguished. From this point of view it might be concluded that there have been quite enough new securities, and that we do not want any more of the speculative kind; that it is better to accept a reduced rate of interest on the investments that we have made, than to encourage the reckless competition of new railways and new lands with those which are already acting. There is however indirect compensation, and those who have to accept diminished income from investments, should remember that the competition of new ventures reduces the cost of living. If income falls off, there are also opportunities for economy—for stretching a diminished income to the dimensions of a larger revenue.

APPENDIX A.

Nominal Value of Securities Quoted in "Official List."

Statement (obtained from successive volumes of Burdett's "Official Intelligence") showing the Nominal Value of the different Securities quoted in the "Official List," Classified under each Head, and the Total Amount of Authorised and Actual Capital which was represented therein on the 31*st December*, 1881-88.

	Securities.	Authorised Issue, 1881.	Amount, December, 1881.	Authorised Issue, 1882.	Amount, 31st December, 1882.
		£	£	£	£
1	British funds	863,096,797	861,832,097	873,614,557	871,580,657
2	Corporation stocks (British)	41,604,223	38,427,440	46,643,802	42,964,544
3	Colonial Government securities	136,244,421	121,974,496	141,069,971	130,579,736
4	Foreign stocks, &c. (dividends payable in London)	999,139,344	827,664,383	1,018,398,190	831,507,365
5	Foreign stocks, &c. (dividends payable abroad)	2,221,044,725	2,200,351,447	2,160,841,557	2,042,836,642
6	Railways, ordinary	249,668.554	238,072,863	245,937,728	237,535,783
7	" leased at fixed rentals	14,928,573	14,890,426	25,077,078	15,038,926
8	" debenture stocks	145,076,660	144,981,321	148,821,031	148,676,42–
9	" guaranteed "	89,695,852	89,637,847	93,366,584	92,089,3–
10	" preference	163,846,554	138,181,540	170,939,988	164,772,7–
11	Indian railways	100,882,983	98,513,038	81,214,210	80,000,031
12	Railways (British possessions)	56,384,918	48,877,634	53,097,120	51,516,177
13	American railroad shares	—	—	—	—
14	American bonds, &c. (currency)	278,467,763	251,752,103	283,901,475	256,638,644
	" (sterling)	59,283,900	51,755,186	54,857,072	51,001,672
15	Foreign railways	59,832,372	57,505,822	59,149,608	56,948,754
16	" railway obligations	337,037,850	310,532,420	321,031,517	321,031,517
17	Banks	185,192,500	76,060,660	144,559,040	55,817,660
18	Canals and docks	32,628,513	30,828,538	33,682,479	33,150,679
19	Commercial, financial, &c.	81,939,073	42,905,669	27,402,186	18,862,457
20	Corporations, colonial and foreign	15,127,159	12,947,047	15,241,050	13,034,547
21	Land and investment	9,313.863	6,490,033	75,087,956	33,501,375
22	Gas	24,762,060	21,753,111	22,827,470	21,842,685
23	Insurance	72,008,570	12,758,616	75,375,670	12,833,437
24	Iron, coal, and copper	12,776,775	10,700,743	15,846,525	13,409,009
25	British mines	957,813	899.653	694,032	648,572
26	Foreign "	20,687,621	19,075,935	22,234,172	20,149,847
27	Shipping	14,529.485	10,358,355	14,495,395	10,748,348
28	Tea and coffee	2,140,000	1,569,070	2,177,500	1,592,819
29	Telegraphs and telephones	34,566,555	29,750,234	31,633,955	29,608.089
30	Tramways	6,184,070	5,501,714	7,275,870	6,448,080
31	Waterworks	10,956,548	10,364,465	11,357,241	10,785,367
	Total value of securities quoted in "Official List"	6,340,006,09–	5,786,913,906	6,267,942,024	5,677,252,000

Nominal Value of Securities quoted in "Official List"—Contd.

Class of Security.	Authorised Issue, 1883.	Amount, December, 1883.	Authorised Issue, 1884.	Amount, December, 1884.
	£	£	£	£
1 British funds, &c.	879,495,535	877,461,635	813,224,016	811,957,016
2 Corporation stocks (United Kingdom)	46,742,026	46,003,948	56,099,612	55,511,136
3 Colonial Government securities	150,847,121	139,928,092	156,611,144	122,285,709
„ inscribed stocks	—	—	74,835,207	51,257,337
4 Foreign bonds, &c. (coupons payable in London)	1,000,366,171	769,210,936	912,456,721	701,292,839
5 Foreign stocks, &c. (coupons payable abroad)	—	—	1,724,820,194	1,606,165,856
6 Railways, ordinary	251,100,513	243,099,777	254,141,198	248,907,982
7 „ leased at fixed rentals	15,092,073	15,047,298	15,042,873	14,968,098
8 „ debenture stocks	152,227,517	151,910,630	164,882,416	163,991,444
9 „ guaranteed stocks	93,176,556	91,678,042	94,822,642	92,491,225
10 „ preference	169,309,512	165,954,591	179,825,252	171,576,914
11 Indian railways	80,098,159	75,995,249	82,395,151	77,639,929
12 Railways (British possessions)	55,606,838	54,416,249	76,938,253	74,484,326
13 American railroad shares	—	—	—	—
14 American bonds, &c. (currency)	310,053,147	277,768,353	333,352,841	290,448,436
„ (sterling)	56,802,458	53,631,924	55,373,488	54,052,954
15 Foreign railways	75,312,718	72,748,982	82,950,803	80,658,727
16 „ obligations	317,247,754	317,247,754	464,211,942	464,211,942
17 Banks	153,120,644	54,657,177	155,787,061	52,756,523
18 Canals and docks	38,321,718	36,122,035	37,431,812	35,031,606
19 Commercial, &c.	30,488,191	22.607,072	36,548,006	24,502,620
20 Corporations, colonial and foreign	16,568,768	14,418,206	17,907,809	15,278,597
21 Financial, land and investment	71,181,852	31,270,982	72,707,552	32,480,795
22 Gas	23,712,790	22,697,045	25,097,395	24,170,550
23 Insurance	76 200,496	11,974,179	65,900,496	11,343,147
24 Coal, iron, and steel	16,526,825	14,183,573	17,519,527	14,680,674
25 Mines, British	704,164	648,795	573,999	533,039
26 „ foreign and colonial	23,535,768	21,721,981	21,346,160	19,880,021
27 Shipping	14,512,505	10,391,368	15,889,485	10,624,652
28 Tea and coffee	2,047,500	1,597,264	1,937,500	1,423,889
29 Telegraphs and telephones	33,301,755	30,456,417	33,837,754	31,173,866
30 Tramways and omnibus	8,433,520	7,436,600	10,044,420	8,944,700
31 Waterworks	11,776,001	11,051,603	12,646,366	11,980,760
Total value of securities quoted in "Official List"	4,173,910,595	3,643,337,757*	6,066,659,095	5,376,707,309

* Excluding foreign bonds (coupons payable abroad).

Nominal Value of Securities quoted in "Official List"—Contd.

	Class of Security.	Authorised Issue, 1885.	Amount, December, 1885.	Authorised Issue, 1886.	Amount, December, 1886.
		£	£	£	£
1	British funds, &c.	824,432,085	822,830,585	835,659,862	834,058,362
2	Corporation stocks (United Kingdom)	62,099,892	60,770,324	66,811,469	65,991,648
3	Colonial Government bonds	142,589,335	125,067,031	135,841,435	102,484,071
	„ inscribed stocks	82,551,007	74,148,861	105,468,542	97,699,519
4	Foreign stocks, &c. (coupons payable in London)	900,494,457	714,384,973	899,167,013	701,966,388
5	Foreign stocks, &c. (coupons payable abroad)	1,703,305,528	1,585,662,245	1,809,378,263	1,678,191,789
6	Railways, ordinary	261,437,171	255,053,615	262,746,599	256,883,895
7	„ leased lines	16,447,285	16,372,150	16,412,286	16,372,511
8	„ debenture stocks	166,754,263	166,287,083	173,766,202	172,929,171
9	„ guaranteed	94,819,424	93,964,944	95,498,089	94,936,829
10	„ preference	176,793,858	172,571,060	185,958,757	183,129,576
11	Indian railways	80,128,609	76,797,508	81,947,803	80,289,826
12	Railways (British possessions)	82,737,184	80,444,710	88,921,232	86,805,584
13	American railroad shares	—	—	217,627,728	209,706,068
14	„ bonds, &c. (currency)	348,032,937	314,136,109	178,391,154	157,776,756
	„ „ (sterling)	53,450,354	51,816,280	50,159,473	47,836,363
15	Foreign railways	89,252,332	85,080,225	92,414,496	89,535,349
16	„ obligations	483,488,292	483,488,292	485,082,778	485,082,778
17	Banks	155,250,944	52,665,934	153,740,394	52,104,934
18	Canals and docks	38,267,838	35,756,636	40,630,406	37,911,609
19	Commercial and industrial	39,926,949	27,943,457	46,113,564	32,709,059
20	Corporation stocks, colonial and foreign	19,989,800	17,692,206	22,715,918	19,837,706
21	Financial, land and investment	71,734,643	31,427,074	78,885,043	36,158,359
22	Gas	25,302,790	24,395,945	25,758,365	24,799,820
23	Insurance	71,800,496	11,287,838	70,300,496	11,042,033
24	Coal, iron, and steel	17,519,527	15,174,494	15,951,697	13,741,833
25	Mines, British	620,497	579,537	518,147	482,307
26	„ foreign and colonial	21,258,342	19,804,623	21,335,222	19,850,723
27	Shipping	16,097,660	11,878,148	16,099,485	11,951,762
28	Tea and coffee	1,900,000	1,393,152	2,006,000	1,463,722
29	Telegraphs and telephones	33,781,543	30,949,772	33,913,543	30,733,737
30	Tramways and omnibus	8,723,520	8,161,880	9,288,020	8,789,700
31	Waterworks	13,082,541	12,640,289	13,642,691	13,120,371
	Total value of securities quoted in "Official List"	6,103,571,103	5,480,637,340	6,332,247,172	5,676,374,158

Nominal Value of Securities quoted in "Official List"—Contd.

Class of Security.	Authorised Issue, 1887.	Amount, December, 1887.
	£	£
1 British funds, &c.	841,096,057	837,351,257
2 Corporation stocks (United Kingdom)	70,984,953	69,711,424
3 { Colonial Government bonds	134,127,635	92,796,562
3 { „ inscribed stocks	125,094,590	111,194,276
4 Foreign stocks (coupons payable in London)	926,102,501	713,678,934
5 „ abroad)	1,861,489,948	1,728,640,205
6 Railways, ordinary	271,491,128	265,662,509
7 „ leased lines	11,570,889	11,431,114
8 „ debenture stocks	177,976,381	177,011,469
9 „ guaranteed	101,146,605	100,416,097
10 „ preference	185,855,428	180,055,740
11 Indian railways	76,417,488	76,695,892
12 Railways, British possessions	90,418,332	88,124,005
13 American railroad shares	229,173,101	222,557,511
14 { „ bonds (currency)	204,184,450	181,831,243
14 { „ „ (sterling)	48,947,174	46,315,364
15 Foreign railways	100,515,814	95,682,715
16 „ obligations	559,211,479	455,003,533
17 Banks	160,213,937	53,645,506
18 Canals and docks	44,535,141	41,982,572
19 Commercial, industrial, &c.	57,227,092	43,461,683
20 Corporation stocks (colonial, &c.)	24,728,418	21,844,806
21 Financial, land and investment	85,947,576	40,207,038
22 Gas	25,679,755	24,717,299
23 Insurance	68,629,396	10,692,428
24 Iron, coal, and steel	16,974,757	14,037,379
25 Mines, British	536,624	505,904
26 „ foreign	22,503,921	20,305,790
27 Shipping	15,161,285	11,127,743
28 Tea and coffee	2,152,560	1,567,749
29 Telegraphs and telephones	35,175,300	32,080,139
30 Tramways and omnibus	10,010,658	9,434,688
31 Waterworks	13,828,798	13,468,471
Total value of securities quoted in "Official List"	6,599,109,171	5,795,239,045

APPENDIX B.

Showing the Securities and Amounts Valued. British Funds.

	Nominal Amounts.		Nominal Amounts.
	£		£
Consols	330,755,965	Bank of Ireland	3,000,000
New and reduced	259,643,657	India 4 per cent.	53,443,504
„ 3½	225,746	„ 3½ „	4,798,690
„ 2¾	4,646,619	„ 3 „	3,000,000
„ 2½	33,228,820	Rupee paper 4 per cent.	66,435,208
„ Red Sea telegraph	36,000	„ 4½ „	20,611,267
Turkish 4 per cent. guaranteed	3,815,200	Rupee debentures	2,000,000
Bank of England	14,553,000		800,193,676

Securities and Amounts Valued—Contd. Corporation Stock.

	Nominal Amounts. £
Metropolitan Board of Works, 3½ per cent.	17,056,012
Metropolitan Board of Works, 3 per cent.	5,350,000
Corporation London Bonds, 3½ per cent.	2,855,900
Birmingham corporation stock, 3½ per cent.	3,000,000

	Nominal Amounts. £
Leeds corporation, 3½ per cent.	516,900
Liverpool, 3½ per cent.	6,000,000
Nottingham, 3 „	1,000,000
Swansea, 3½ „	600,000
	36,378,812

Colonial and Provincial Government Securities.

	Nominal Amounts. £
Dominion of Canada, 3½ per cent.	2,000,000
Cape of Good Hope, 4½ per cent.	6,831,900
Cape of Good Hope debentures, 5 per cent. ...	4,131,200
Ceylon, 4 per cent.	1,766,000
Natal, 4½ „	1,300,000

	Nominal Amounts. £
New South Wales, 190$\frac{3}{10}$ 4 per cent.	7,201,000
New Zealand, 4½ per cent.	3,098,000
Queensland, 1913 4 „	8,910,000
S. Australia, 1894 4 „	7,776,900
Tasmania, 4 per cent.	1,900,000
Victoria, 4 „	4,500,000
	49,415,000

Colonial Government Inscribed Stock.

	Nominal Amounts. £
Canada stock, 3½ per cent..	3,000,000
New South Wales, 3½ per cent.	1,018,900

	Nominal Amounts. £
New Zealand, 4 per cent....	12,870,771
Victoria, 4 per cent.	4,486,000
	21,375,671

Foreign Stocks.

	Nominal Amounts. £
Argentine, 6 per cent.	3,172,000
„ hard dollars 6 per cent.	2,969,705
Argentine, 1884 5 per cent.	2,000,000
Austrian, Gold 4 per cent..	21,503,000
Brazilian, 1865 5 per cent.	5,051,300
„ gold loan 4½ per cent.	4,907,644
Belgian, 1874 3 per cent.....	20,517,128
Buenos Ayres, 1888 6 per cent.	2,157,000
Chilian, 4½ per cent............	1,992,400
„ 1875 5 per cent.	1,039,000
Danubian, 1867 8 „	563,620
Egyptian, Unified 4 per cent.	56,693,250
Egyptian Government preference 5 per cent.	22,367,800
Egyptian State Dom. 5 per cent.	7,798,040
Egyptian Daira San. 4 per cent.	8,795,440

	Nominal Amounts. £
French Rentes, 4½ per cent.	271,466,397
Greek, 1881, 5 per cent.	4,676,600
Hungarian gold, 1881 4 per cent.	54,018,170
Italian, 5 per cent.	157,275,484
Mexican, 1851 3 per cent.	10,241,650
Peru, 1872 5 „	20,437,500
Portuguese, 3 „	43,380,141
Russian Nic. Railway, 4 per cent.	22,426,160
Russian, 1875 4½ percent.....	14,787,750
Spanish, 4 „	77,183,597
Swedish, 1880 4 „	5,388,600
Turkish Prior 5 „	7,067,260
„ Gen. Reg. 1 per cent.	43,968,396
Uruguay, 5 per cent.	11,113,100
Virginia, Cert. of Reg.........	2,920,601
	907,878,133

Securities and Amounts Valued—Contd. *Home Railways Ordinary.*

	Nominal Amounts. £
Caledonian consols	10,856,970
Great Eastern ordinary	12,273,007
„ Northern, con. org.	8,867,977
„ Western	18,886,670
Lancashire and Yorkshire	15,392,995
London, Brighton, and South Coast Railway (ordinary)	3,224,300
London, Brighton, and South Coast Railway (deferred)	2,137,350
London, Chatham	11,123,051
„ and North Western	36,785,000

	Nominal Amounts. £
London and South Western	9,782,888
Manchester deferred	1,916,460
Metropolitan consols	4,531,830
„ (district)	2,250,000
Midland	26,428,079
North British (ordinary)	4,625,869
„ Eastern	22,807,704
„ Staffordshire	3,230,140
South Eastern (ordinary)	3,183,370
„ (deferred)	2,861,920
	201,165,780

Debenture Stocks.

	Nominal Amounts. £
Caledonian, 4 per cent	5,663,038
Great Eastern, 4 „	5,534,661
„ Northern, 4 per cent.	8,340,492
„ Western, 4 „	9,192,583
Lancashire and Yorkshire, 4 per cent.	8,318,309
London and Brighton, 4 per cent.	1,306,239
London and Chatham, 4½ per cent.	5,492,945

	Nominal Amounts. £
London and North Western Railway 4 per cent.	24,705,879
Manchester and Sheffield, 4½ per cent.	7,146,241
Metropolitan, 4 per cent	2,940,319
Midland, 4 per cent.	16,835,964
North British, 4 per cent.	4,380,242
„ Eastern, 4 „	12,287,175
South „ 3 „	4,342,440
	116,486,527

Railway Preference Stocks.

	Nominal Amounts. £
Caledonian No. 1, 4 per cent.	3,579,872
Great Eastern consols, 4 per cent.	5,041,708
Great Northern, perpetual, 4½ per cent.	5,655,000
Great Western consols, 5 per cent.	11,364,572
Lancashire and York-shire consols, 4 per cent.	8,390,187
London and Brighton consols, 5 per cent.	6,190,315

	Nominal Amounts. £
London and North Western consols, 5 per cent.	23,080,620
London, Chatham and Dover 1st preference	5,588,000
London and South Western, 4 per cent.	8,834,454
Midland, 5 per cent.	11,158,541
North British, 4 per cent.	3,850,198
North Eastern, new preference, 4 per cent.	10,727,080
South Eastern 4½ per cent.	2,155,830
	105,616,377

Indian Railways.

	Nominal Amounts. £
East Indian Annuities, 4 per cent.	6,550,000
Great Indian Peninsula, 5 per cent.	20,000,000
Madras, 5 per cent.	8,760,031

	Nominal Amounts. £
Oude and Rohilcund, 5 per cent.	4,000,000
Scinde Punjab 5 per cent.	11,075,290
	50,385,321

Securities and Amounts Valued—Contd. Railways, British Possessions.

	Nominal Amounts. £
Canadian Pacific	13,000,000
Grand Trunk Canada Cons.	20,160,000
" (guar. 4 per cent.)	5,219,800
" (1st preference)	3,218,149
" (2nd ")	2,327,795
" (3rd ")	7,168,055

	Nominal Amounts. £
Grand Trunk (5 per cent.)	4,270,575
Tasmania (main line) debenture	650,000
	56,014,374

American Shares.

	Nominal Amounts. £
Denver and Rio Grande (com. stock)	5,832,000
Illinois Central	5,800,000
Lake Shore and Michigan	9,893,300
Louisville and Nashville (cap. stock)	3,626,703
New York Central and Hudson River	17,885,660
New York and Lake Erie	15,388,620

	Nominal Amounts. £
Ohio and Mississippi (ord.)	4,000,000
Pennsylvania railroad	12,741,880
Philadelphia and Reading ($50)	6,536,875
Union Pacific $100	7,352,460
Wabash (preference shares) $100	4,000,000
	93,057,498

American Railroad Bonds (Currency).

	Nominal Amounts. £
Central of New Jersey (consols), 7 per cent.	2,968,400
Central Pacific 1st mortgage, 6 per cent.	5,176,600
Chicago, Milwaukee, and St. Paul, 7 per cent.	4,080,852
Chicago and Pacific bonds, 5 per cent.	3,708,000
Denver and Rio Grande (1st consol.), 7 per cent.	3,316,500
Louisville and Nashville mortgage bond, 6 per cent.	2,072,200

	Nominal Amounts. £
Erie 2nd consol. mortgage, 6 per cent.	6,719,480
New York, Pennsylvania, and Ohio, 1st mortgage, 7 per cent.	8,591,200
Oregon bonds, 1st mortgage, 6 per cent.	1,800,000
Pennsylvania Company 1st mortgage, 4½ per cent.	3,100,000
Wabash general mortgage (bonds), 6 per cent.	10,000,000
	51,533,232

American Railroad Sterling Bonds.

	Nominal Amounts. £
Atlantic 1st leased, 4 per cent.	805,200
Baltimore and Ohio, 4½ per cent.	2,400,000
New York Central and Hudson, 6 per cent.	2,000,000

	Nominal Amounts. £
New York, Pennsylvania, and Ohio, 6 per cent.	1,600,000
Philadelphia general mortgage, 6 per cent.	3,937,200
	10,742,400

Securities and Amounts Valued—Contd. Foreign Railways.

	Nominal Amounts. £
Bahia and San Francisco, 7 per cent.	1,800,000
Buenos Ayres (Great South)	2,000,000
„ and Pacific, 7 per cent. debenture stock	800,000
Central Argentine, quar. 7 per cent.	1,300,000
Dunaberg and Witepsk	2,007,000
Mexican, ordinary	2,254,720
„ 1st pref.	2,554,100
„ 6 per cent. perpet.	2,000,000
North West of Uruguay (1st preference)	408,700
Ottoman (S to A)	892,000
Varna	893,740
	16,910,260

Foreign Railway Obligations.

	Nominal Amounts. £
Beira, Alta, Portuguese, 3 per cent.	2,422,340
Chark of Azof, 5 per cent.	4,291,621
Ottoman, 6 per cent.	724,700
Provincial, Orel Vit, 5 per cent.	4,422,000
South Austrian, 3 per cent.	68,650,000
Varna, 3 per cent.	2,750,000
	83,260,661

Banks.

	Nominal Value. £
Alliance (Limited)	800,000
Anglo-Austrian	1,500,000
„ Californian	299,700
„ Egyptian Banking Company	1,600,000
Anglo Foreign	420,000
Bank of Africa	500,000
„ Australasia	1,600,000
„ British North America	1,000,000
Bank of New South Wales	1,000,000
Bank of New Zealand	1,000,000
Chartered Bank of India, Australia, and China	800,000
Chartered Mercantile Bank of India, London, and China	750,000
City (Limited)	1,000,000
Colonial	600,000
Consolidated (Limited)	800,000
English Bank of River Plate (Limited)	400,000
Hong Kong and Shanghai	444,825
Imperial (Limited)	675,000
„ Ottoman	5,000,000
London and County	2,000,000
„ River Plate (Limited)	600,000
London and San Francisco	420,000
London and South Western	300,000
London and Westminster	2,800,000
„ Bank of Mexico and South America (Limited)	250,000
London and Joint Stock	1,800,000
„ Paris, and American Bank (Limited)	280,000
Merchant (Limited)	375,000
National (Limited)	1,500,000
„ Provincial	2,200,000
London and Brazilian	500,000
Standard of South Africa	1,000,000
Union of Australia	1,500,000
„ London	1,705,000
	37,419,525

Securities and Amounts Valued—Contd.

Corporation Stocks—Colonial and Foreign.

	Nominal Amounts. £		Nominal Amounts. £
Boston City red., 1893 5 per cent.	989,300	City of Winnipeg red., 1903, 6 per cent.	226,500
City of Dunedin, 1908 5 per cent.	312,200	New York City red., 1901 6 per cent.	3,000,000
City of Montreal, 1874 1904 5 per cent.	626,200	St. Louis City, 6 per cent.	762,200
City of Rome, 4 per cent.	710,400		7,037,700
„ Toronto Water Works, 6 per cent.	410,900		

Financial Land and Investment.

	Nominal Amounts. £		Nominal Amounts. £
American Investment Trust preferred	500,000	Hudson's Bay	1,400,000
		New Brunswick Land	513,000
Australian Mortgages, 4 per cent. debenture stock	1,053,760	Peel River Land and M.	600,000
		Railway Debenture Trust	500,000
Canada, N. W. Land Company	1,317,125	„ Share Trust A.	500,000
		National Discount	846,000
Credit Foncier of Mauritius	120,000	United Discount Corporation	300,000
Foreign and Colonial Government Trust pref.	1,202,456	United States Mortgage	400,000
Government Stock Investment, Limited	500,000		9,752,341

Gas.

	Nominal Amounts. £		Nominal Amounts. £
Commercial (consolidated)	550,000	Imperial Continental	3,500,000
		South Metropolitan B.	1,350,000
Gas Light and Coke (A ordinary)	5,441,820		10,841,820

Insurance.

	Nominal Amounts. £		Nominal Amounts. £
Alliance	550,000	Liverpool, London, and Globe	392,000
„ Marine	250,000		
City of London Fire	200,000	London and Lancashire Fire	185,200
„ Marine	100,000	Marine, Limited	180,000
Commercial Union	250,000	Rock Life	100,000
Eagle	200,000	Royal Exchange	689,220
Fire Insurance Association, Limited	200,000	Thames and Mersey Marine	200,000
		Union Marine, Liverpool	142,240
Globe Marine	100,000	Universal Marine	150,000
Lancashire	270,000		
Law Life	100,000		4,258,660

Securities and Amounts Valued—Contd. Coal, Iron, and Steel.

	Nominal Amounts. £
Consett Iron Company ...	552,000
Ebbw Vale Steel Company	1,395,080
John Brown and Co.	750,000
Nantyglo and Blaina	312,500
Pelsall Coal and Iron	201,500

	Nominal Amounts. £
Rhymney Iron	657,050
Vickers and Son	1,500,000
Bolckow, V., and Co.	1,390,000
	6,758,130

Canals and Docks.

	Nominal Amounts. £
Birmingham Canal	2,397,575
East and West India Dock	2,385,500
London and St. Katherine.	5,756,697
Regent's Canal and City Dock	1,275,000

	Nominal Amounts. £
Suez Canal Shares	7,936,900
Surrey Commercial	964,814
	20,716,486

Commercial Industrial.

	Nominal Amounts. £
Anglo-American Brush	120,000
Brown, Davis, and Co.	45,000
Bryant and May....................	300,000
City Offices, Limited	620,609
Crystal Palace A	200,535
Devas, Routledge, and Co....	140,000
English and Australian Copper, Limited............	175,000
Fore Street Warehouse, Limited	420,000
Foster, Porter, and Co.	210,000
Hammond Electric	201,000
Howell and James, Limited.	70,000
Improved Industrial	500,000

	Nominal Amounts. £
India Rubber Gutta Telegraph Company	312,000
Lion Brewery, Limited	204,000
London and Glasgow Engineering and Shipbuilding	119,575
Midland Railway Carriage and Waggon, Limited...	200,000
Native Guano, Limited	174,325
Nevada Land and Cattle	57,000
Pawson and Co., Limited	240,000
Telegraph Con.	448,200
	4,757,244

Mines—Colonial and Foreign.

	Nominal Amounts. £
Cape Copper.........................	160,000
New Chile Gold	500,000
Devala Moyar	200,000
Indian Consolidated............	550,000
La Plata Mining and Smelting	400,000
Mason and Barry................	1,851,640
Mysore Gold Mining	135,000

	Nominal Amounts. £
New Emma Silver Mining	785,000
Panulcillo Copper	200,000
Rio Tinto Shares	3,250,000
St. John Del Rey................	253,000
Tharsis	1,175,000
United Mexican	1,230,000
	10,689,640

Securities and Amounts Valued—Contd. Shipping.

	Nominal Amounts. £		Nominal Amounts. £
Castle Mail	720,000	Royal Mail	900,000
General Steam	380,000	Union	350,000
Orient ,,	466,000		
Peninsular and Oriental Steam	2,500,000		5,316,000

Indian Tea.

	Nominal Amounts. £		Nominal Amounts. £
Assam	187,000	Lebong Tea	82,000
Darjeeling	135,000	Upper Assam	189,000
Jorehaut	100,000		693,000

Telegraph and Telephone.

	Nominal Amounts. £		Nominal Amounts. £
Anglo-American	1,892,000	Globe Telegraph and Trust	1,770,000
,, (preference)	2,554,000	Submarine	338,000
Brazil Submarine	1,300,000	United Telephone	400,000
Cons. Tel. Construction	225,000	Western and Brazilian	680,000
Direct United States	1,215,000	West India and Panama	883,000
Eastern	3,800,000		
,, Extension	2,500,000		17,557,000

Tramways and Omnibus.

	Nominal Amounts. £		Nominal Amounts. £
Belfast	126,000	London General Omnibus	594,000
Dublin	549,000	,, Street	209,000
Edinburgh	289,000	North Metropolitan	770,000
Glasgow	345,000	Provincial	245,000
Liverpool	400,000	Tramways Union	200,000
London	339,000		4,066,000

Waterworks.

	Nominal Amounts. £		Nominal Amounts. £
Chelsea	685,000	New River debentures	1,000,000
East London	1,625,000	Odessa preference	600,000
Grand Junction	700,000	Southwark and Vauxhall	742,000
Kent	596,000	West Middlesex	1,155,000
Lambeth	950,000		
New River New	500,000		8,553,000

DISCUSSION *on* MR. ELLIS'S PAPER.

MR. FREDERICK HENDRIKS said there could be but opinion in this meeting as to the ability shown by Mr. Ellis in his interesting paper. It was however, rather a popular, than a scientific, investigation. Mr. Ellis had coined a new word in "quantitation," and this might not be open to much objection if it were understood as about equivalent in its meaning to the longer expression of "quantitative analysis" as used, for example, in the science of chemistry. Its aptness, however, on the present occasion, was more doubtful, as the paper did not include any complete investigation such as was really requisite if it were desired to form calculations, in groups, of the index numbers for all Stock Exchange securities like those that had been arrived at in respect of the values in separate years of commodities in this country. He referred not only to the index numbers published by the "Economist," in which it had been the custom to assign an equal degree of importance to each commodity, but to those included in the resent report of the Royal Commission on Depression of Trade, where each commodity included in the imports and exports of the United Kingdom had been assigned an importance relative to its combined bulk and money value. This was only partially done in Mr. Ellis's paper, where it was shown, in the table at the end, that the nominal value of securities quoted in the Stock Exchange list amounted to about 5,795 millions sterling in December, 1887, whilst in the summary table at the beginning it was shown that only 2,772 millions sterling at the same date, or less than one half of the whole, had been dealt with or valued in the calculation of the various index numbers for the years 1880-87. No doubt Mr. Ellis had chosen his data with good judgment, and his grouping might contain fair illustrations of the fluctuations in value of the great leading securities, but it was fairly open to question whether, where so large a number, more than one half had been omitted, some different results might not have been arrived at if all were included. He was however free to admit that there were great difficulties in the way of a complete calculation, and that to arrive at it there would be endless trouble in reconciling the variations arising from year to year in the variable dividends of different securities, and the complicated conditions of repayments at par of issues floated at a premium or a discount, or redeemable in certain terms of years, altering of course in each year that was compared, to say nothing of the differences at various dates arising from drawings and the operations of sinking funds. All these circumstances stood in the way of constructing index numbers for stock exchange securities in the same comparatively easy way that was prossible with the commodities included in exports and imports. Simple market value of a variable return of interest was not in truth a properly adjusted basis for the construction of index numbers. They could only be properly ascertained by comparing the relative values at different dates of a certian amount of fixed interest from each class of security, and if running in perpetuity, as in debenture stocks, or for such a long period of years to come, that the time run off in the years compared did not count for much, it was all the better for the analysis. If this were kept in view far larger fluctuations than those indicated by Mr. Ellis's index numbers for the years 1880-87 would be apparent. This indeed might be proved even from a passage in Mr. Ellis's own paper, where he observes, "taking stocks bearing fixed interest, such as colonial and foreign Government bonds, we find that capital value has increased, and an easy calculation will show roughly that, if the buying price of a mass of stocks has increased from 100 million £ to 110 million £, the return in the way of interest on those stocks is no longer 4 per cent., but only a little more than 3½ per cent. per annum." This can have no other meaning than that 4 millions of interest upon 100 millions of capital value in the market at one date were equal to 3½ millions of interest upon 110 millions of capital value in the market at another date. In the first mentioned value the number of years' purchase is $\frac{100}{4}$ or 25, in the second $\frac{110}{3{\cdot}5}$ or 31·429, and if we are to arrive at the index number scientifically, we must not compare 100 with 110, as Mr. Ellis's index numbers in his paper would be framed, but 100 with 125·698, which is the ratio between 25 and 31·429, so that there is an increase here of above 25⅔ per cent., or far more than the increase in any of Mr. Ellis's comparisons. He (Mr. Hendriks) was individually inclined to the conclusion that this increase of over 25 per cent., which had certainly arisen in the stock exchange market prices of the past ten years, 1877-87, so far as regards debenture stocks of English railway and other first class securities (where the interest was looked upon as fixed and invariable either in perpetuity or for so long a period of years as would nearly satisfy the meaning of that term), had remarkably well illustrated what seemed to him a natural deduction from the principles of political economy, namely, that the present value of a perpetual or fixed rate of interest for money would increase in the inverse ratio of a fall in the price of commodities, or would decrease in the inverse ratio of a rise thereof. Thus concurrently with the rise of about 25 per cent. in the money value of the past ten years in well secured perpetual interest, there had been a corresponding fall of about 25 per cent. in the wholesale prices of commodities, as was shown in the index numbers when calculated so as to give each commodity its relative importance. Mr. Ellis's remarks upon all the different groups of securities embraced in the Stock Exchange quotations seemed to be much to the point, and extremely instructive, as might be expected from a publicist so well acquainted with the details of finance. There was one point, however, on which he would differ from him, as without ranking himself amongst the pessimists by any means, he (Mr. Hendriks) did not agree that these were times in which the British public should at all relax any cautions they were ever disposed to take in the matter of the borrowings of foreign Governments in this market. It should be kept in mind that all Government loans were in one respect to be classed with the worst of securities. They were debts of honour, and as such could not be legally enforced. It was surely a matter of painful record how certain foreign Governments in Europe, as well as in other parts of the world, had viewed these debts as binding only so long as it suited the debtor's convenience. He had just remarked that, even in ten years, commodities had fallen one-fourth in value, therefore all fresh borrowings now, as affected by the appreciation of gold, was, for equal amounts of fresh debt incurred, one-third more burdensome than it was ten years ago, and he certainly did not regard with a light heart the enormous growth already visible in the ever increasing accumulation of these State mortgages upon the future industry, labour, income, and capital of already heavily taxed communities. If commodities were to go on falling, and the value of gold debts rising, this system of indebtedness would break down through its own weight of heaped up taxation.

Mr. H. **MONCREIFF PAUL**, while complimenting the author on the research displayed in his interesting paper, could not accept all the conclusions at which he had arrived. He had attributed the course of prices in the stock markets, following to a certain extent the prices of commodities, to the fact that those securities, which have followed the course of commercial markets, were the classes specially affected by the state of trade. In order to justify that conclusion, it would be necessary to show that a very large percentage of the summary table of market values was represented by *quasi* commercial stocks. But unfortunately for this argument the position was quite otherwise, because fully two-thirds of the aggregate of the table was composed of British, colonial, and foreign Government stocks, which did not sympathise with the course of values of commodities. Again, in this table it was stated that these were the prices respectively of commodities and securities at the end of each of the years named. But in order to obtain a true comparison it would be necessary to have the average of each of the years, and not to compare simply the position at the end of each. For instance, during the first nine months of 1887 the average of commodities was very close to that of 1886; but when a comparison was made at the end of the year it was found that 1886 was 98 and 1887 was 106, showing that during the last three months of 1887 there must have been a very great rise in the price of commodities to cause this difference. This rise during the concluding quarter of that year was much greater than during the corresponding period of 1886, nor did a similar rise occur in any of the other years quoted. This apparent similarity in the course of prices of securities and commodities must therefore be regarded as a mere coincidence. The true cause was that indicated by Mr. Goschen, Mr. Giffen, and others, that when prices in trade tend to fall, money is diverted to stocks. This argument, as the author truly remarked, commended itself to reason. He could not too strongly emphasize what had been said by a previous speaker about foreign loans. But investors were not bound to lend only to foreign countries. There were colonial Government securities for investment which, having regard to the resources of those colonies, might be regarded as something more than mere "debts of honour." There was however one great difference between the position of foreign and colonial loans. Many of the leading foreign loans were international, and therefore the market was supported not only by the position of the stock here, but also by its position at other continental centres. With colonial Government loans this was not the case, and if there was any pressure here to sell, colonial bonds felt this more intensely than foreign securities. The author cited the fact of American flour coming to this market as an instance of a desire to prepare everything for the consumer in England. He was not sure that this was quite a case in point. To a large extent the reasons why American flour was an increasing factor in the exports of the United States, were the ability to consume locally the offal which arose in the conversion of wheat into flour; the consequent saving in freight and transit charges, and the abnormally high prices obtained for the best flour retained in the States, which enabled American exporters to ship cheaply the lower grades to this country, when they were often able to undersell the British miller in this market.

Mr. ROWLAND HAMILTON said that there was one most important factor in judging of the true value of stocks which should be steadfastly kept in mind. The effects of the work produced by capital expended were always liable to pass away and to cease sooner than the permanent obligation for the payment of interest upon that capital. This made it in almost all stocks of paramount importance rigidly to observe the principle of a "sinking fund," so that each year and each generation might bear its fair share of its own burdens, and not transmit a weight of interest to the future when no corresponding service or advantage was rendered. He desired to refer only to the principle involved, and not to any special forms by means of which it might be carried out. Thus in the case of railway debentures it was the security which was renewed from time to time by the replacement of the permanent way and all the works connected with the railway. By such means productive property appropriately representing the debenture charge might be amply maintained. The sole essential point was that work done should not decay while the interest and charges borne remained in full force.

Mr. J. GLOVER, while sharing the feeling of the meeting in saying they were under great obligation to the author, at the same time thought they would best appreciate his labours if they were contented to accept the conclusions of his figures as indications and nothing more. With regard to what the author took to be the causes of the changes in the market value of stocks, he (Mr. Glover) agreed that one had been the reduction in the supply of good securities. No doubt the public had been very cautious with regard to foreign investments, and the new securities offered had been fewer than in 1885. To this there was an exception in the case of South America, for during the last year there was scarcely a month during which they did not hear of some loan from the Argentine Republic or Buenos Ayres. They must therefore wait a little longer before coming to an exact conclusion upon the result of their investments during this decade. Another reason given by the author was "the growth of capital and financial power in Germany and elsewhere." There might be some truth in that, but he was rather under the impression that the development of financial power in Germany had led to immense investments in industrial operations, a great many of which had not been particularly successful. On reading the table and comparing the prices of securities and commodities, the impression made on his mind was that things were being compared that had scarcely anything to do with each other, and the comparison itself did not appear to justify it. He agreed that reduced dividends might inevitably result in the scarcity of good securities. They had all heard of the steady accumulation of capital which took place in this country every year, and the want there was of a large opportunity for investment; and if those opportunities did not come in the ordinary course, the inevitable effect was that good securities which were high before became higher. He thought the steadiness of the bank shares, beginning at 98½ and ending at 97, reflected the greatest possible credit on those who had the management and practical control of their banking system. He could hardly agree with the author's remarks about "prices and pessimism." Which quarter of the world had a right to complain about the reluctance of the English market to lend? Was there any direction in which they could look in which they had not bad debts? His own opinion was that the English had been if anything rather too willing lenders; and if there was one lesson about their past lendings it was this, that they should think less about the loans put forward by foreign Governments, and more about the development of the immense territory under their own flag, which needed nothing for its development but English men and money.

Mr. F. Faithfull Begg said, as a member of the Stock Exchange, he should be very glad if a check was given by anything that was said in the paper to speculative transactions, such as those which had been so much talked about recently, and which were a prostitution of the institution rather than an exercise of its proper functions. He wished the author had given a few more deductions from the facts set forth. He had given a mass of very valuable figures, but in the absence of sufficient deductions there was very little in the paper which afforded scope for criticism. He did not quite follow the remark that capital had been lavished in other places to the detriment of home investments. Possibly there was in the mind of the author an idea that a return to something in the nature of protection might be a good thing. However this might be, capital was cosmopolitan, and any attempt to confine it was impossible. It would find its way inevitably to those places where the most profitable outlet existed. They had not within their own borders a sufficient capacity for investment, but had in those foreign countries a scope which enabled them to utilise these larger surplus funds. In fact these must necessarily remain absolutely unproductive unless sent abroad. He understood the author to say that the proposed reduction of the interest upon the British funds would lead in all probability to a shrinkage in the capital value. That was a subject which had been very much discussed, but an answer to the criticism might be found in that part of the paper itself where it was pointed out that the rate of interest yielded by a typical mass of colonial and foreign Government bonds had decreased from 4 to 3½ per cent., now the proposed reduction upon the Government debt was only ¼ per cent. for the present, rising to ½ per cent. only after a lapse of years.

Mr. T. H. **Elliott** said that although he very much agreed with the author's general conclusions, he differed from him in some degree as to the reasons which led to those conclusions, and as to the facts on which they where based. During the past ten years the value of capital had steadily decreased, owing to its accumulation in a greater ratio than the opportunities for its profitable employment, and the return upon it was therefore diminished. Consequently in those securities where a fixed rate of interest had been guaranteed there was naturally an increase in the market value of the stock. Referring, for example, to the table of Government stocks, it would be seen that where there was a contract to pay a certain fixed sum annually in gold there had been a steady increase in price, but that table included a large figure for rupee paper and debentures, the value of which had steadily decreased, so that the increased aggregate value really represented a greater proportionate increase on the fixed interest bearing securities. Mr. Ellis's reasons for the advance in values were summarised under three heads. With reference to the first, "a cessation of the supply of new securities recognisable by the Stock Exchange," he was not quite clear that that was a fact. It was true that if they took the figures in Burdett's book, the total value of securities taken was practically what it was in 1881, but an analysis would show some remarkable figures which stood in need of explanation. Taking for instance the total nominal capital on bonds the coupons of which were payable abroad, a reduction was shown between 1881 to 1885 of some 400 and 500 millions; but there was an important and steady increase under almost every other head. Probably that reduction in foreign stocks was due to the conversion of old debts and the reduction of nominal capital, and not merely to a "cessation of the supply of new securities." With reference to the second reason, the "continued accummulations of capital diverted from trade," he did not quite like the use of the word "diverted." He was not quite clear that the capital invested in trade was not as great as ever it was. Savings might have accummulated, and been put into Stock Exchange investments, but he did not believe there had been any absolute diminution of capital employed in trade in this country during the last seven years. The third point, with reference to "the growth of capital and financial power in Germany and elsewhere," he entirely agreed with. As had been said, capital was cosmopolitan, and if capital in other countries grew in volume and competed with capital here, the result naturally was that the return in both countries would be much reduced.

Sir **Rawson** W. **Rawson** said his experience lately in examining averages, led him to suggest that the author should supplement his paper by separating into distinct categories the securities yielding a fixed dividend, and those that yielded a fluctuating dividend. He thought also that items that were so large as really to overwhelm the others, should be shown separately; for instance, the British and Indian funds and foreign Government stocks showed an aggregate of 1,700 millions £ out of the 2,700 millions £. The real facts of the case would be arrived at more satisfactorily by showing what the fluctuations had been independently of those vast amounts, which had too great an influence upon the averages proposed for their observation.

Mr. J. E. MATTHEWS, with reference to the question of investing money in foreign loans, said it was the first axiom of political economy that money was not wealth, but was a medium of exchange. What in reality took place when large sums of money were borrowed from this country by foreign Governments? Did they actually send them that money? They did nothing of the kind; the greater part of it went out in the shape of exports, which benefited the trade of this country very largely. At present, for instance, they were exporting very largely indeed to South America, and the interest on their loans came back in the shape of imports. The quantity of bullion held in this country continually increased, the quantity of foreign securities continually increased, and the trade of the country continually increased. He therefore would not advocate such extreme caution in lending to foreign Governments, because it was not only in the way of interest that it came back to the individual investor, but in many ways it would benefit the country at large.

The CHAIRMAN (Mr. R. Giffen), in asking the Society to pass a vote of thanks to the author for his very able paper, said the best testimony to its interest was the useful discussion to which it had led. Considering that the subject was comparatively new, a great deal ought to be allowed to a paper of this sort, whatever its defects might be, because it brought the subject before the public for the first time, and started a form of inquiry which might grow to be very useful. Of course it was very difficult in commencing an inquiry to discern all the branches into which it might lead, and the topics on which it was capable of throwing light, but at least the author had done quite enough in suggesting some inquiries which might be useful. Mr. Hendriks had especially touched upon one of these points, as to what was meant by a comparison between the rise in securities and the fall in commodities. The author had also suggested a good deal in those tables where he compared the difference in the fluctuations of the different groups of securities, which was certainly most instructive. No such comparison was possible unless the inquiry was made in the form which had been adopted, not merely looking at individual prices, but grouping them in some way so as to perceive what different causes affected them, and how they fluctuated differently from time to time. Another point suggested by these figures, was, that taking the totals at the bottom of the "Summary Table, Market Values," they found that at the end of the five years, and calculating to

February of the present year, the aggregate did not vary by more than about 4 per cent. Looking at what goes on in the stock markets, the panics which happen from time to time, and the great fluctuations which take place in different securities, it was most interesting to find that taking the same securities at different periods, and large groups of them, the variation of the mass was by so slight a percentage. That was a point which gave a very different idea of the fluctuations of the stock markets from what might be gained by reading money articles from time to time. He thought that if these inquiries were carried further some additional points might be taken up. For instance, he should like to see a little more attention given to the issues of new securities, and that some mode should be adopted for showing the increase in the aggregate mass of securities, including the new ones, as well as the rise in the value of the old ones, as that was an important matter for the purpose of different investigations which might be made. He would be glad to know whether in dealing with securities and omitting some, the author had always had regard to the question whether the security was probably held in this country or not. The aggregate at which he arrived would conform very nearly to the aggregate mass of stock exchange securities in this country, but he could hardly gather from the list of securities that that was a point to which the author had always had regard in the selection. The table was useful because it dealt with a large mass of securities, but still it would be important to have a distinct line of selection adopted and followed throughout. If they were to deal with a representative mass they should include, if possible, an equal proportion of the different groups. Perhaps the author, or some other investigator, might do that in carrying the investigation further. With regard to the relation between the rise in the price of securities and the fall in the price of commodities, he agreed with Mr. Hendriks that the proper comparison was between the yield of the securities and the prices of commodities. They would often find in many states of the money market, at least when the price of securities rose as indicated by the number of years' purchase, that there was a fall in the price of commodities. Still that was not the way in which, to the best of his recollection, he had used the word in dealing with the question to which the author had referred. What he believed he had pointed out was, that it was important always to recognise that relatively a rise of securities, if commodities did not change in value, of itself meant a relative fall in the value of commodities; that was as between the securities and commodities, and that was a fact which should always be remembered. What Mr. Hendriks had pointed out carried the thing a little further, because the relative difference of securities which he referred to, when they had on one side not only a rise in the money price of securities, but a fall in the value of commodities, was much greater than the 25 per cent. which he indicated. These were questions of language which became very useful in many investigations and it was important that they should be kept in mind. He could not have expected that there should be much correspondence over the short period indicated by the author, between the aggregate value of securities and the index number for commodities which he referred to, partly because the period was too short, and partly because the aggregate mass of the securities which he dealt with did not include the new securities, which would be a very important point in these investigations. Another thing which he should like to have seen added, so as to make the comparisons complete, would have been some indication of the aggregate value of the circulating capital indicated by the index number of prices, so that the aggregate value of such circulating capital might be compared with the aggregate value of the mass of the securities. If they could get those figures and compare them at different times the comparisons would be extremely interesting. He gathered from one remark by the author, that there had been no issues of Government loans in France to any great extent since 1880. That statement had rather surprised him, and he should be glad if the author would look into it a little and see whether it was quite justified, and whether, even though the Government might not have been issuing loans directly, there had not been loans issued by companies and institutions which were doing the work that the Government would otherwise do. He suspected very much indeed that borrowing in France had not been quite so completely checked as would seem at first sight to be the case. He quite agreed with those who thought that perhaps there had been even of late years too much foreign borrowing, and that a good deal of caution ought to be exercised by the public of this country in dealing with these foreign loans.

Mr. Ellis, in reply, acknowledged the very careful discussion which had arisen on his paper. Mr. Hendriks had suggested that all the securities should be taken that were found in the official list; but in that case they would get many that were not held in the United Kingdom. His object primarily had been to take those held in this country, but also to take a good variety of securities so as to get a good mixture from which to get the index number. With regard to foreign loans he agreed that caution was always desirable, but over caution followed by over inflation in speculative securities was not desirable. He believed that India offered a great field for the Englishmen and English money referred to by Mr. John Glover. As to his suggested favouring of protection because he thought investments would be better made at home than abroad, he could assure the Society that he had no leaning that way whatever. He had not intended to convey the impression that French loans had altogether ceased, but the gigantic indemnity loans, which absorbed the accumulated capital not only of France but of foreign countries for several years after the war, had ceased. Certainly the French Government had borrowed in one form or another for some years, and the effect on French savings was no doubt all the greater because of the depressed state of agriculture and the diminished rate of accumulation of capital. He was much obliged to Sir Rawson Rawson for his suggestion to separate the two categories of securities, and would at some future time make up a table in accordance.

MISCELLANEA.

CONTENTS:

	PAGE
I.—The Statistics of Examinations. By Professor F. Y. Edgeworth, M.A.	599
II.—Statistics of Incomes in Prussia, Saxony, and the United Kingdom. (A translation)	635
III.—Agriculture and Prices in the Seventeenth Century	649
IV.—Notes on Economical and Statistical Works	654
V.—Quarterly List of Additions to the Library	664

I.—*The Statistics of Examinations.*

By Professor F. Y. Edgeworth, M.A.

[Read before Section F of the British Association at Bath, in September, 1888.]

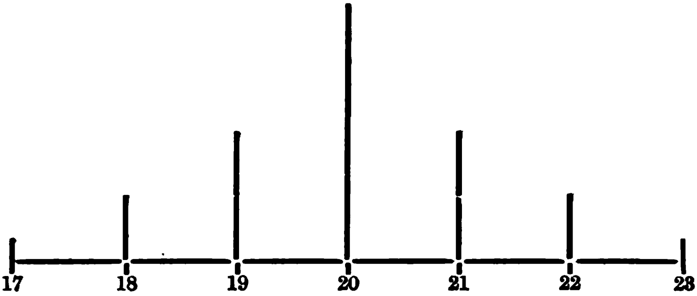
ANALYSIS OF CONTENTS.

Existence and Nature of Error	600
Error incident to an Aggregate of Inaccurate Items	600
Estimate of the Error incident to the aggregate of Marks according to which the Candidates at a typical public Examination are arranged	600
A. Error in appreciating the work done at the Examination	602
I. Uncertainty due to the existence of a *minimum sensibile* in our perception of Degrees of Merit	603
II. Deviations caused by the Idiosyncrasies of Examiners	603
1. Variations in the importance assigned to each question	605
2. Variations in the Scale of each subject	606
(1). Directly affecting the absolute number of Marks	607
(2). Indirectly affecting the relative Position of the Candidates	607
III. Errors caused by the Negligence of Examiners	609
1. In marking each Answer	609
2. In the Scale according to which any particular paper is marked	610
B. Error incurred in taking the work done at the Examination as evidence of the Candidate's Proficiency	611
Total Error resulting from all causes	612
Amount of displacement due to Error: number of Candidates who may have been placed in a wrong class	615
Recommendations based on Statistical grounds	616
I. The arrangement of Honour Lists should be Alphabetical	616
II. The Work of Assistant Examiners should be alleviated	617
(1). A preliminary arrangement based on a complete examination of only *half* the answers might be sufficient for the purpose of a Pass Examination	617
(2). The Increase of the number of Examiners not so objectionable as supposed	619
III. It might be possible to elevate, or depress, the results of Examiners who have adopted different scales	619
IV. The Standard should be based on the Average, rather than the best, Answering	620
V. Upon a certain hypothesis the theoretically preferable method of combining marks may be to take their *Geometrical Mean*, not their sum	620
VI. Query whether honours and offices might not be better distributed by an admixture of *Sortition* than by mere Examination	626
Appendix, containing illustrations of theorems in Probabilities	627

THAT examination is a very rough, yet not wholly inefficient, test of merit is generally admitted. But I do not know that anyone has attempted to appreciate with any approach to precision the degree of accuracy or inaccuracy which is to be ascribed to the modern method of estimating proficiency by means of numerical marks. It occurs to me that the mechanism for effecting this computation is contained in that part of the Calculus of Probabilities which is known as the Theory of Errors. The doctrine of chance and error is eminently germane to the present subject.

The Theory of Errors supplies two appropriate conceptions which are perhaps not sufficiently considered both by those who extol and those who disparage, the system of public examinations. First, the experience of physicists in observing times and distances and other measurable quantities, shows that even our most distinct perceptions are inaccurate. The observations of the senses are blurred by a fringe of error and margin of uncertainty. *Humanum est errare* is a truth to which the generally educated person may give an otiose assent. But only the mind imbued with the doctrine of errors-of-observation fully realises how fallible are our perceptions of continuous quantity or degree, how natural and normal, and even regular in its irregularity, is error. Consider our estimates of weight for instance. Suppose a certain mass to be weighed by a rough balance, or even the unassisted human hand (as often in the case of a letter or parcel). It is very unlikely that the number thus determined will coincide with the true weight, that which would be given by an exact atomic balance. Yet it is not likely that the apparent weight will deviate from the true weight by more than a certain extent. If we collected a number of weight-determinations of the rough sort above described, we should find that the smaller deviations from the truth were very frequent, the larger errors rare. In fact the divergent observations would be grouped in a form which a lively French statistician has figured as the *gensd'armes' hat.* The horizontal base of the hat indicates degrees: in the case before us ounces or fractions of ounces. The height of the hat above each point in the base represents the frequency with which each particular degree is assigned by an observer as the true weight. Thus the true point, lying in the mean as it were, is the point more frequently observed than any other particular point. The extent of error to which an observation is liable is measured by a certain coefficient, technically termed the "probable error." The probable error is the extent by which any observation is just as likely as not to fall short of, or to exceed, the mark.

Now there is reason to believe that a similar grouping of divergent estimates prevails when we are weighing—not physical mass—but intellectual worth. Given a piece of Latin prose for example, let a number of equally competent critics independently assign a mark to the piece. It is not to be thought that they will all put down the same figure, even supposing that the examiners have agreed beforehand as to the degree of proficiency which may be expected, or the scale of excellence to be adopted. Suppose a definite answer to have been given to all questions of the sort which I remember once to have been put at an examination by an unabashed candidate. Glancing at the piece which had been set for translation, he said in a nonchalant tone to the examiner: "Do you wish this prose done in the style of Livy or of Tacitus?" (The examiner, equal to the occasion, replied that he would be satisfied with the style of *either* of those authors.) Whatever precautions have been taken to secure unity of standard, there will occur a certain divergence between the verdicts of competent examiners. Say full marks are *thirty;* then if one examiner marks 20, another might mark 21, another 19. If we tabulate the marks given by the different examiners, they will tend to be disposed after the fashion of a *gend'arme's hat.* There will be some one mark, say 20, which is assigned most frequently; 19 and 21 will occur not so frequently, but pretty often. The figures more distant from the central value 20 will be rarer.



This central figure which is, or may be supposed to be, assigned by the greatest number of equally competent judges, is to be regarded as the true value of the Latin prose; just as the true weight of a body is determined by taking the mean of several discrepant measurements. There is indeed this difference between the two species of measurement, that in the case of material weight we can *verify* the operation. We can appeal from kitchen scales to an atomic balance, and show that the mean of a great number of rough observations tends to coincide with the value determined by a more accurate method. But in intellectual ponderation we have no atomic balance. We must be content without verification to take the mean of a number of rough measurements as the true value. No doubt philosophical difficulties are here raised, which it would be out of place to discuss here. Assuming some such theory about the Standard of Taste, as Hume has so admirably stated in his essay on that subject, I think it is intelligible to speak of the mean judgment of competent critics[1] as the true judgment; and deviations from that mean as errors.[2]

So far of the existence and nature of error. But the Science of Probabilities does not merely convince of error; she also reveals a way of escaping from its consequences.

By the cumulation of erroneous observations it is possible to approximate to the truth. Take the example of weight above given. Suppose in roughly weighing a mass of about a pound weight one is liable to an error (a "probable error"[3]) of 1 per cent., that is about a sixth of an ounce on the pound. Let a hundred or more of such parcels be separately weighed, and let the results be added to form the measure of the aggregate bulk. At first sight it might appear that the whole would be liable to the same proportion of error, *i.e.*, 1 per cent., as each of the parts, that is rather more than a pound on a hundred-weight. Not so, however. In virtue of the *mutual compensation of independent errors* the mean error of the whole (the absolute distinguished from the proportionate error) is not a hundred times that of the part as might have been expected, but the *square root* of a hundred times. In other words the proportionate or percentage error of the aggregate is ten times less than that to which each item is liable. So much stronger is the whole chain than its individual links.

These fundamental principles are now to be applied to estimating the erroneousness, or deviation from the true mean, incident to sum-totals of marks given at examinations. The most scientific method of exposition would perhaps be to construct an algebraic formula, as a sort of empty frame to be filled in by the practitioner with the data proper to each particular kind of examination. But the presentation of the theory is likely to be more attractive if its generality is clothed with the details of a particular instance. Accordingly I shall construct a sort of typical examination to serve for what Berkeley calls a "representative particular." The essential features of this type are the number of candidates and subjects at the examination: circumstances which are favourable to the application of the Calculus of Probabilities. Most of the conclusions to be drawn may be transferred to public examinations involving a variety of heterogeneous subjects.

At the typical examination which I contemplate, the candidates who have passed are arranged according to the aggregate of marks which they have received on ten different papers. The maximum attainable on any one paper is 300. Those who, without failing in any subject, have not obtained in all the subjects more than 2,000 marks, are placed in alphabetical order in the category of "Pass." Those who have obtained more than 2,000 marks are placed in the higher category of "Honours," and are arranged in the order of merit according to the number of marks which they have received.[4] It is proposed here to estimate the "error" to which these sum-totals of marks are liable; and thence to deduce the degree of certainty or uncertainty incident to the distinctions grounded on these marks.

---

[1] I have developed this view more fully in a little treatise on the art of measurement, entitled *Metretike* (London: Temple Company).

[2] There is something infelicitous in the use of the term "error" to denote a fortuitous deviation from an ideal mean. But on the whole I think that the advantage which the term has in being familiar to the student of Probabilities preponderates over the disadvantage which it has in suggesting to the general reader what is far from being intended here, a palpable and easily avoidable mistake of the kind called clerical.

[3] See above, p. 600, for fuller explanation of the terms and theories here employed. See Dr. Venn's *Logic of Chance*, 3rd edit., chapters xviii and xix.

It should be explained that no attempt is made to estimate the large element of chance which is introduced by the possibility of a candidate being "out of sorts" on the day of examination; or of the paper being specially adapted to the accidents of his taste or reading. It is assumed, as in the case of our public examinations may be safely assumed, that the paper set is in each case an ideally fair one. The idiosyncrasy of the examiner will be taken account of only in so far as it disposes him to mark high or low particular questions, not as causing him to insert questions favouring a particular class of candidates.[5]

With these understandings let us now attempt to estimate and superpose the various errors to which a sum total of marks at this typical examination is liable. The most intimate and inexhaustible source of error is the inability of our judgment, like that of our senses, to discern exceedingly small degrees. There must be a *minimum sensibile* in our perception of excellence. This margin of uncertainty will no doubt vary with different subjects and persons. There is not much room for degrees of excellence in working the simpler sums of arithmetic. But, where taste may be evinced, as in a paper relating to English literature, the lines of discrimination which we draw must be very broad. Where subjects are for the most part of the simpler sort, it will perhaps be sufficient to allow for this source of uncertainty a probable error of 5 per cent. on the mark for each answer. That is nearly as much as to say, that when an examiner is putting down 20 (out of a possible 30 as full marks) he very generally hesitates between 19 and 21 as equally representing to him the worth of the answer; and occasionally his range of hesitation will extend over a wider tract. I base this estimate partly on my own experience and partly on answers received from experienced examiners.

We have now to consider how this fluctuation of each element will affect the aggregate. For the purpose of this computation we must make some assumption as to the number of questions which a candidate answers in the course of the whole examination. It will be assumed here that 80 is the usual number of questions tried.[6] If there is here an error of excess, it will be on the side of *under*rating the error incident to the sum total. Upon this assumption, according to the principle laid down above, the error under the present heading incident to an aggregate of marks is $\frac{5}{\sqrt{80}}$ per cent. of the aggregate, say at least ½ per cent. Thus if some number between 2,000 and 2,050 has been assigned to a candidate, there is an uncertainty to the extent represented by a probable error of 10 or 11 as to the position of the candidate. If we could believe that each mark had been assigned by a person of ideally perfect judgment, still, owing to the imperfect graduation of even the most perfect judgment, the sum total is the sport of accident to the extent which is indicated by a probable error of 10.

---

[4] My category of "Honours" corresponds to the "successful candidates" in an open competition for the Army or the India or Home Civil Service.

[5] If this assumption appears inappropriate to subjects in which abstruse questions necessitate severe marking, it will be easy to modify our formulæ so as to cover this species of "personal equation."

[6] There is a slight imperfection in this estimate, in that some of the work consists not of answers to questions, but of translations or composition. But it is

With regard to the interpretation of this indication, it should be explained that the "probable error" is a datum conveying much more definite information when we are dealing with large aggregates than with items. For it is pretty certain that aggregates will fluctuate according to the normal law above figured as the "*gensd'armes' hat;*"[7] whatever the mode in which the individual item oscillates: for instance, if, as possibly in the case before us, the uncertain wavering with regard to each particular question were represented by a college cap on edge, rather than by the curvilinear, *gensd'armes'* pattern. Now, where the normal grouping prevails, a "probable error" of 10 corresponds to a possible error of 20, and what may be called a very improbable error of 40. The odds against the error of 20 would be only 6 to 1; against the occurrence of an error *four* times the probable error the odds are nearly 250 to 1. Accordingly that limit is very generally assumed by physicists to designate the utmost possibility of error. It will be seen, therefore, that even on the most limited view of the influence of chance a considerable uncertainty arises as to the true position of the candidates in the Honour List.[8]

But we have now to introduce a more serious cause of inaccuracy or deviation from the supposed true mean. This is the idiosyncrasy, the personal equation of the examiners. As exemplifying the minimum operation of this factor, the hypothesis that each paper is under the direction of a single mind will first be entertained. We may distinguish under this head two species of accidental variation

---

I believe very generally the practice of examiners to break up such work into pieces, to be scrutinised and marked separately. My estimate therefore does not seem to require much alteration. However, it may be well to observe that the calculation would not be materially altered—and perhaps the data could be better ascertained—if I had taken as the element or item to be compared, not the mark of a question, but that of a whole paper.

[7] See, on this important theorem, my "Methods of Statistics," *Journal of the Statistical Society*, Jubilee volume, 1885.

[8] The position of the candidates who come out high in the list is much less likely to be affected by this and other sources of uncertainty; for the reason that the differences in marks between the candidates at the top of the list are apt to be much greater in the theory explained and verified by Mr. Galton.—*Hereditary Genius*, pp. 33, &c. It is natural also to suppose that the graduation of the upper part of the list is effected with peculiar care and scrupulosity by the examiners; that by comparing marks independently assigned by the examiners to the same work, by conferences and mutual explanations, and in other ways, chance is eliminated.

relating to particular answers and to the whole scale or level. We might compare the former species of oscillation to the fluctuations of an ever stormy sea; the latter to the ebb and flow of the tide, in some localities enormous, in others insignificant. The former oscillation is probably the more uncontrolled and unconsiderable, at any rate in a well-organised examination governed by steady traditions. A probable error of 10 per cent. on each answer would, I think, be a moderate allowance for this first species of error. This estimate is confirmed, as at least not above the mark, by the opinion of many examiners whom I have questioned,[9] and by the inspection of some statistics of marks assigned to the same set of answers by two different examiners (presumed to have much the same scale).

In interpreting such a set of statistics, it should be borne in mind that the difference between the two sets of marks may be expected to be greater[10] than the deviation which is here under investigation, namely, the difference between the marking of any particular set of examiners and the ideal or mean marking which would be attained by a consensus of competent critics. Again, the observed difference between the marking of different examiners is aggravated by the element of uncertainty which has been attributed to the existence of a *minimum sensibile*.[11] These considerations being borne in mind the statistics which I have inspected and the opinions which I have heard expressed correspond fairly well with the estimate of a probable error of 10 per cent. (corresponding to a just possible error of more than 30 per cent.).[12] Upon this assumption the "probable error" under this heading which affects the aggregate of marks amounts to about 1 per cent. $(10 \div \sqrt{80})$.

Another result of each examiner's individuality will be to push up or down the scale of marks in his subject. The following instance will explain my meaning. At a recent examination I marked one set of papers on a certain subject (English), and a colleague another set of similar papers on the same subject. Although we had agreed beforehand as to the worth of the different questions, and as to the degree of proficiency which might be expected from the candidates, yet the average of his marks came out some 13 per cent. higher than mine; the former being (out of a maximum of 300) 165, the latter 145.[13] Had the choice of examiners in one of the English papers for this examination lain between or among persons differing as to their scale of marks to such an extent, it should seem that the average on the marks in that subject might have varied to the extent of 13 per cent.[14]

---

[9] An experienced Oxford examiner writes: "In general where examiners are careful and experienced, marks run very close; within (say) 10 in translations [full marks being 100], within a class, or better half a class, in subjects and essays [there being four classes, and the mark given being one of the letters α, β, γ, δ, qualified in some cases by a + or −, to indicate a doubtful or intermediate position]. But there are exceptional cases where opinion differs largely" [supposing, as we supposed above, that the examiners do not collate their independent marking]. It will be noticed that this testimony relates to a whole paper, and to the discrepancy between two examiners, not between the examiner and the ideal mean. The estimate of this discrepancy on the basis which I assumed is a probable error of 9 per cent., which seems to be a little in excess of my informant's estimate. The same sort of corroboration is afforded by the statistics of the Cambridge Tripos Examination which are given below.

[10] In the ratio $\sqrt{2} : 1$.

[11] If E be the observed mean difference per cent. between two (numerous) sets of marks, and p the probable error per cent. here investigated, and if the probable error ascribed to the existence of a *minimum sensibile* is 5 per cent., then p is equal to, or rather not less than, $\cdot 477 \sqrt{1 \cdot 57 \text{E}^2 - 100}$. Thus if E prove to be about 20 per cent., which seems to be a very general experience, then p is not less than 10 per cent.

[12] *Cf.* above, p. 604.

But no doubt it is to be supposed that in so well-organised a system as that of our public examinations care is taken to avoid this cause of disturbance. We may suppose a tradition as to the relative value of each subject to be preserved by the slowly changing staff of chief examiners. Still, in spite of conscious efforts to maintain constancy, it would not be unreasonable, I think, to assume a probable error of 4 or 5 per cent. due to the factors under consideration.[15] Thus, supposing there was no real difference between the papers in Mechanics of this year and the preceding, that the real average so to speak of both sets of papers was 150, yet in the sortition of examiners it is as likely as not that the average may be pushed up to 156 or down to 144; and it is possible that it may deviate much further from the ideal mean.

Let us now consider the effect of this disturbance on the aggregate of marks. Each paper being liable to a probable error of 3 per cent., the sum of ten papers must be liable to a probable error of say $\frac{4\cdot5}{\sqrt{10}}$; or about $1\frac{1}{2}$ per cent. Thus, owing to the cause under consideration, a good number of candidates who might have been above the honour line under one set of examiners may find themselves below it under another set. But of those who would obtain honours under any set of examiners the *order*, so far as we have seen, is not disturbed by the fluctuations in the absolute number of marks.[16]

---

[13] I reckon the percentage by reference to the mean of the two averages, viz., 155.

[14] It is a nice technical point that the existence of a fortuitous error affecting each particular answer, as supposed under the preceding headings, is apt to distort the evidence of the error here conceived as affecting integrally the whole average or level of marks in any subject. Suppose, for instance, the average of marks assigned by two different examiners to the same set of 100 answers differed to the extent of 10 per cent., we could not—consistently with the assumptions which have been made about the error affecting each particular mark—be certain that the difference of scale was really greater than 7 per cent. In the example cited in the text, the evidence of difference of scale was still further masked by the circumstance that the marks were assigned to different sets of papers presumed to be of the same calibre. However, by applying the proper statistical tests, I have satisfied myself that the large apparent difference of scale corresponded to some real difference.

[15] In making this estimate I stand astonished, like Clive, at my own moderation. For there is no doubt that at many of our public examinations the fluctuations in the "scale" are enormous. Mr. Eve, in his wise and witty lecture on *marking*, alludes to this average as the most independent variable which he ever encountered. It is said to be a frequent occurrence at some of our civil service examinations that a candidate, when examined for the second time, after a year's hopeful study of a subject, obtains fewer marks in it than he had obtained at the first examination. I have heard of an examiner, at one of the older universities, marking on a scale lower by half than that employed by his colleagues. Mr. Eve mentions similar occurrences at school examinations. An experienced examiner, who is also one of the highest living authorities on statistics, Dr. Venn, writes to me: "I have frequently raised or depressed my own marks (or my colleagues') by as much as 25 per cent. all through in order to bring them into general harmony."

But we must now take into account that the *relative* position of the candidates is liable to disturbance by variation in the scale upon which the different papers are marked. This would happen on the following hypothesis. When an examiner "marks high" (or *mutatis mutandis* low) it is not to be conceived that he increases the set of marks which would have been obtained under an average examiner, by adding the same amount to each mark. Rather, it may be held, he increases the marks by *multiplication*. Thus suppose the marks for one paper would have ranged under an average examiner about 20, and for another paper about 5. Now let there supervene an examiner who, whether from mere good nature, or a high opinion of the importance of the subject, or a low opinion as to what may be reasonably expected from the candidates, "marks high." The new set of marks may prove to be not 30 and 15, but 30 and 7 or 8.

In proof of this hypothesis I may adduce the evidence of some experienced examiners whom I have consulted. There is also an *à priori* reason for expecting this effect: namely the psychological law which is connected with the name of Fechner. On the other hand, this hypothesis commits us to the theory that statistics of examinations will conform, not to the normal law of grouping which Quetelet has made familiar, above figured as the *gensd'armes' hat*, but to a certain asymmetrical curve which is patronised by Mr. Galton. Now in the case of two sets of marks for answers which I have examined—consisting one of about 800 and the other about 3,000 marks—I failed to detect the slightest symptom of this asymmetrical arrangement. I found only a beautiful exemplification of the normal law. With much the same result I have scrutinised some 3,000 aggregate-marks given at fifteen of the examinations recorded in the reports of the Civil Service Commissioners (the average number of candidates at these examinations being 200). The statistics of examination which Dr. Charles Roberts has analysed present the same result.[17]

The point is of less importance in the present connection than might appear. For suppose that the effect contemplated does exist. Then, as more is added to or taken from those that have much already, there will be a displacement of the parts, a sort of strain, in addition to the thrust forward or backward of each aggregate of marks. But the additional probable error with which this strain affects any aggregate turns out to be very slight, namely, $\frac{1}{3}$ or at most $\frac{1}{2}$ per cent.[18] Altogether, this item may safely be neglected.

---

[16] It being assumed that all the candidates take up all the subjects; which is not strictly true of many public examinations.

[17] The statistics relate to examinations in the North London Collegiate School for Girls.

So far we have in effect supposed one examiner to each of the ten subjects. The reasoning is not materially affected by the existence of colleagues and assistants, as long as we can suppose a perfect unity of management with respect to the papers in each subject. But with the increase of the staff which the multitude of candidates renders necessary, it becomes unlikely that the four or more examiners concerned with the answers in one subject should be so perfectly drilled as to act like one man. To appreciate the effects of divided management let us make an extreme supposition that the superintendence of each paper, instead of being as hitherto supposed absolutely single, is distinctly dual. That is, if there are, as in this year I believe, 2,000 candidates, we are to suppose that in arithmetic Professor A independently examines the candidates whose ciphers are between 1 and 1,000, and Professor A^1 the candidates who range from 1,000 to 2,000. Again, in geometry Professor B takes the first batch of candidates, and Professor B^1 the second. And so on up to the tenth subject. Thus the first batch are, as it were, measured by a chain which may be symbolized as $A + B + C +$ &c., $+ I + L$; the measure employed in chaining the extent of the other candidates' proficiency is $A^1 + B^1 + C^1 +$ &c., $+ I^1 + L^1$.

Now let it be assumed that each Professor, *e.g.*, A, is equally competent as the corresponding Professor in the same subject, A^1, and equally well informed with respect to the answers of the questions which have been set. On this assumption, where is the disadvantage or hardship in measuring the different moieties of the candidates by two different professorial chains? None that are very obvious from a theoretical point of view as regards the chance of each candidate to be placed in the Honours List. Each chain is, as it were, taken at random from a heap of equally imperfect chains, and one is as likely as another to be a good measure. With regard indeed to the arrangement in the order of merit of the honours, no doubt the dual management is fatal. But even in this respect it is worth remarking that, once unity of management has been sacrificed, the evil is not necessarily aggravated by multiplying examiners. Plurality is not any worse than duality. If you measure some of the compared objects by one apparatus and others by another, it is certainly illusory to arrange the whole set of measures thus obtained in arithmetical order. But this procedure does not become more illusory, if you use *three* measuring rods instead of two.

However, there are no doubt practical objections to increasing the staff; such as the greater difficulty of instructing a larger number in the traditions which may exist as to the scale to be employed in each subject; upon which scale the importance of the subject in its combination with the others must depend. Moreover, as will be shown below,[19] there are theoretic reasons in favour of a large group being committed to a single examiner when it is attempted by a scientific process to scale down the results of his marking to a fixed standard.

---

[18] The computation requires a datum, with respect to which I have some statistics, the *inequality* of an average candidate's answering; and the solution, which I have performed approximately, of an unusual problem in the Calculus of Probabilities.

The question whether it is expedient to increase the number of examiners leads up to a fresh source of error, which may be in part ascribed to the paucity of the examining body. The number of the staff in relation to the quantity of work to be done, and the time for doing it, is sometimes such as to necessitate an extraordinarily rapid rate of examining. This rate, though safe enough for the purpose of a Pass Examination, may seem precarious when the nicer distinctions of Honours are involved. It must be remembered, however, that the marking made under these conditions is—in all the cases which have come under my notice—subject to the comparatively leisurely revision and re-examination by certain chief examiners. It is therefore not to be taken for granted that this source of error affects the ultimate arrangement of the candidates who have passed; and accordingly this item shall not be included in our account. At the same time it is not irrelevant to the statistics of examinations to consider what extent of inaccuracy *might* be produced by hurry. Annexed are some statistics bearing on this question; the results of experiments which I have tried on some papers submitted to me for examination. The subject of these papers was the English Language; the answering was, I have reason to believe, of the calibre which prevails at many public examinations.

The upper row in each triplet consists of marks of answers, assigned at the rate of fifteen papers per hour (each paper containing about nine or ten answers); the second row consists of marks assigned at leisure and on the fullest consideration to the same answers. The third row in each triplet exhibits the difference between the two sets of marks for the same paper. It will be seen that the salient discrepancies are rare, and that they become obliterated in the average. The mean difference per cent.,[20] or more technically the mean error, is 33·5. Now it is to be remembered that the mean error thus obtained is not identical with the "probable error" which we have all along been using as the measure of fluctuation. The "probable error" is equal to about 0·84 the mean error—in the present case then about 28 per cent. This estimate has to be again further reduced by taking account of the *minimum sensibile*, which was very considerable. If we allow for it a probable error of 12 per cent., the estimate will be reduced to about 25 per cent. In order to estimate the effect which this error per item has in an aggregate of 80 items, we have to divide by $\sqrt{80}$. This gives a "probable error" of $2\frac{1}{2}$ or 3 per cent. in the aggregate, due to the negligence of haste.[21] If for the sake of illustration we imagine the nine papers whose marks are given to have been written, not on the same subject by different candidates, but on different subjects by the same candidate, we might regard the sum of these marks as the aggregate obtained by the candidate on all the subjects. We should expect the discrepancy

---

[19] See pp. 620—625.

[20] By "error per cent." understand the percentage which the mean error in each paper is of the mean answer for that paper.

[21] It is to be distinctly repeated that this degree of laxity is not attributed to any existing institution. It has only been attempted to illustrate the degree of

											Mean Difference.	Mean Difference per Cent.	Sums.
Speed	20	15	35	10	20	20	30	20	30	15	—	—	215
Leisure	*20*	*25*	*35*	*10*	*20*	*15*	*30*	*10*	*30*	*15*	—	—	*210*
Difference	0	10	0	0	0	5	0	10	0	0	2·5	12	—
Speed	0	10	0	0	5	10	5	5	0	15	—	—	50
Leisure	*0*	*15*	*5*	*0*	*0*	*0*	*5*	*5*	*0*	*5*	—	—	*35*
Difference	0	5	5	0	5	10	0	0	0	10	3·5	100	—
Speed	25	20	15	5	20	15	25	20	25	20	—	—	190
Leisure	*20*	*15*	*10*	*15*	*15*	*20*	*20*	*5*	*15*	*20*	—	—	*155*
Difference	5	5	5	10	5	5	5	15	10	0	6·5	42	—
Speed	15	15	15	0	20	20	15	10	15	—	—	—	125
Leisure	*15*	*15*	*10*	*0*	*20*	*20*	*20*	*10*	*10*	—	—	—	*120*
Difference	0	0	5	0	0	0	5	0	5	—	1·5	12·5	—
Speed	30	25	15	20	20	30	20	20	20	—	—	—	200
Leisure	*30*	*25*	*15*	*30*	*25*	*30*	*25*	*20*	*30*	—	—	—	*230*
Difference	0	0	0	10	5	0	5	0	10	—	3·3	13	—
Speed	15	15	15	0	20	20	15	10	15	—	—	—	125
Leisure	*15*	*15*	*10*	*0*	*20*	*20*	*20*	*10*	*10*	—	—	—	*120*
Difference	0	0	5	0	0	0	5	0	5	—	1·66	12·5	—
Speed	30	25	15	20	20	30	20	20	20	—	—	—	200
Leisure	*30*	*25*	*15*	*30*	*25*	*30*	*25*	*20*	*30*	—	—	—	*230*
Difference	0	0	0	10	5	0	5	0	10	—	2·33	13	—
Speed	10	15	10	5	10	5	10	0	0	—	—	—	65
Leisure	*15*	*20*	*0*	*5*	*5*	*5*	*5*	*10*	*5*	—	—	—	*70*
Difference	5	5	10	0	5	0	5	10	5	—	5	64	—
Speed	10	0	0	0	5	5	10	0	—	—	—	—	30
Leisure	*5*	*5*	*0*	*0*	*5*	*5*	*10*	*0*	—	—	—	—	*30*
Difference	5	5	0	0	0	0	0	0	—	—	1·25	33	—
Sums												302	1,200 *1,200*

inaccuracy which *might* be produced *in the absence of revision and re-examination.*

between *speed* and *leisure* in the long run of such batches of nine papers to be as often above as below (2 or) 3 per cent.[22] In the particular instance before us it happens by an extraordinary chance that the aggregates obtained at full speed and at considerate leisure are exactly identical, each being 1,200!

It may be expected that the difference between haste and leisure will be more conspicuous when the calibre of the papers is better, when taste and reasoning power have to be estimated; and accordingly I have tried on some selected papers the experiment which is above described as applied to the bulk of papers. Here is a specimen. The upper row of figures in each of the annexed triplets was obtained at the fullest speed which seemed consistent with the results not bearing manifest traces of scamped work, which rate proved to be about three or four minutes to a paper. The lower row of figures was assigned at perfect leisure. The discrepancies do not seem more serious than those which were presented in the case of less deserving candidates.[23]

											Mean Error.	Mean Error per Cent.
Full speed	20	15	15	15	15	20	20	30	15	25	—	—
Leisure	*35*	*20*	*25*	*25*	*20*	*35*	*30*	*30*	*15*	*25*	—	—
Difference	15	5	0	10	5	15	10	0	0	0	6	23
Full speed	25	20	20	25	10	15	15	15	20	20	—	—
Leisure	*25*	*20*	*25*	*30*	*25*	*15*	*15*	*15*	*25*	*25*	—	—
Difference	0	0	5	5	15	0	0	0	5	5	3·5	16

There is another effect beside inattention to particular answers which may be ascribed to the haste of the examiners. Every judge in the course of a sitting prolonged through several days is liable to alternate fits of severity and lenity. An examiner is in a different mood when he sits down fresh to his task in the morning, and during the weary hours of the all-night sitting which often becomes necessary. Now, if there was a margin of time, it might be more possible to correct these swirls of temper, and make sure that the scale according to which one is marking to-day is the same as that which was adopted some days earlier. However, even under the most perfect arrangements, it must be difficult, where the work extends over many days, to entirely eliminate this source of error.

What amount of effect shall we ascribe to this wabbling of the scale? Considering that it does not affect all the papers, nor perhaps all examiners, an allowance of 1 or 2 per cent. on each paper might be sufficient. This divided by the square root of the number of papers gives ½ per cent. for the probable error on the aggregate due to this cause.

---

[22] Supposing the proper coefficient to have been ascertained by a more complete induction than the summary process which we have employed.

[23] The effects of haste would probably have been less considerable if the subject had been more mechanical than English.

Let us see now how the account stands.

	Percentage Error of Aggregate.
Due to the existence of a *minimum sensibile*	½
Due to the examiner's idiosyncrasies—	
(1) As regards particular questions	1½
(2) As regards the whole scale	1½
Due to the negligence of examiners as regards the scale....	½
Total (square root of sum of squares of items)	2

The several items being cumulated according to the principles of the Calculus of Probabilities,[24] there results a "probable error" of rather more than 2 per cent. on the aggregate of marks. For instance, if a candidate obtains an aggregate of 1,965 marks, thus falling below the Honour line by 35 marks, the odds that he ought by rights to be in the Honour Class are considerable, say one in four. Even if he has obtained only 1,800 marks it is by no means certain that he is rightly placed among the rank and file of pass men. There is a similar uncertainty in the region above the Honour line. To such an extent are the honours shuffled by the fortune of examinations—

> "Fortuna, sævo læta negotio et
> Ludum insolentem ludere gestiens,
> Transmutat incertos honores."

The estimate which has been made is confirmed, or at least shown not to be extravagant, by some statistics relative to the Cambridge Classical Tripos Examination, which Dr. Venn has kindly procured for me. There are 90 triplets and 179 pairs of marks; in all 628 returns. The constituents of each triplet (and similarly of each pair) are marks given to the same paper by three (or two) different examiners. We have thus ample materials for estimating the extent of difference to be expected between the marks of different examiners. From a scrutiny of the statistics I find, as might be expected, the discrepancy is greater in some subjects than in others, for instance in Composition and History as contrasted with Translations. Upon an average, I think, the extent of deviation (from an ideal Mean such as described above) may be represented by a probable error, on the mark of a paper, of not less than *nine* per cent. Whence it follows[25] that the probable error on the aggregate of 9 or 10 papers would be *three* per cent., which is somewhat in excess of our estimate.

The truth and import of this conclusion may be made clearer by the annexed table, which I have compiled from the statistics kindly furnished by Dr. Venn. In this table the first column designates the 15 candidates, for each of whom I have before me the marks assigned to 18 papers by different examiners. In Column 2 each entry is the aggregate of marks assigned by one set of examiners to 10 of those papers: 5 of the more fluctuating species, namely Composition, and 5 consisting of Translation, in which the marking seems to be more stable. Column 3 contains the corresponding aggregate of marks assigned by another set of examiners to the same papers. Column 4 gives the half difference between the entries in Columns 2 and 3: that is the deviation of each of two entries from their mean. Column 5 gives the deviation per cent. (per cent. of the mean).

---

[24] See the writer's "Methods of Statistics." The present computation would have appeared more elegant to the mathematician, but more obscure to the general reader, if we had taken as our unit or item not *probable error*, but *modulus-squared*, or, as I prefer to say, *fluctuation*.—(Ibid.)

[25] Supposing, of course, that the inference from Cambridge Tripos to public examinations generally is legitimate. It will be understood that we are all along concerned with the order of probability rather than an exact arithmetical estimate.

1 Candidates.	2 Aggregates of Ten Marks.	3	4 Deviation.	5 Deviation per Cent.
A	782	836	23·0	3·0
B	596	583	6·5	1·0
C	664	675	5·5	1·0
D	525	549	12·0	2·0
E	753	742	5·5	1·0
F	384	340	22·0	6·0
G	632	508	32·0	5·0
H	335	307	14·0	4·5
I	413	472	30·0	7·0
J	739	745	3·0	0·5
K	518	588	35·0	6·0
L	714	648	33·0	5·0
M	646	733	43·5	6·5
N	624	632	4·0	0·5
O	512	547	17·7	3·5
				52·5
				3·5

It will be seen that of these deviations-per-cent. almost as many are above as below, 3; thus fulfilling our theory. Or we might employ the following method of verification. The *average* error of an aggregate of 10 marks, as collected from the table, is 3·5. Now, by a well known theorem, the *probable error* of an aggregate tends to be ·84 × the *average* error.[26] The probable error in the present case is therefore about 3.—*Q.E.D.*[27]

---

[26] See the appendix.

[27] It will be observed that in this verification we have virtually assumed that the mean of each pair of marks relating to the same paper is the true, the ideal, mark of that paper. This assumption is of course inaccurate; and it follows that the fluctuation has been somewhat underrated. It is a delicate question what correction should be made in virtue of this consideration. According to the usually received theory, the error observed in the above table should be multiplied by 1·4, and that previously computed by a more general scrutiny of the statistics (comprising triplets as well as pairs) should be increased in a slightly less ratio. Our computation that the probable error is "not less than" 3 per cent. is sufficiently accurate for the present purpose.

We have so far been endeavouring to estimate the error which is incurred in appreciating the actual work done by the candidate. We have now to evaluate the error which is committed in taking his answers as representative of his proficiency. Now every statistical average—or, what comes to the same thing, sum—considered as representing a true mean which would be brought out if we could prolong the statistical series indefinitely under unchanged conditions—is affected with an extent of error depending upon the number and divergence of the items which go to make up the mean or sum in question. Let us take an example in a scholastic sphere. Suppose a hundred lines are taken at random, and not consecutively, from the Æneid, or at least the parts thereof which have been statistically scrutinised by the present writer. Let the number of dactyls in those 100 lines be 160. What is the probability that the batch observed is a fair sample? To what extent is it likely that the number 160 deviates from the mean number of dactyls which would be presented if we went on and on taking random batches? The answer depends on the fluctuation of the number of dactyls from line to line. Having ascertained by observation the required coefficient, I am in a position to say that the observed 160 is not likely to be out by 20 dactyls, and very unlikely to be out by 30.

To apply this theorem to the case before us, we require to know the dispersion or fluctuation of the candidates' answering. To ascertain this coefficient, it would be necessary to scrutinise the marking in all the different subjects. I have contented myself with a cursory inspection of the marks given by two examiners in one and the same subject. As might be expected, there was some difference between the two examiners, and considerable difference between the various candidates, as regards the steadiness of the marking. On an average I think the variation of the marks from answer to answer would be adequately represented by a "probable error" of 25 or 30 per cent.

It is a nice technical point that the fluctuation thus approximately determined is not exactly the coefficient which we require under the present heading, but the same aggravated by some of the errors enumerated above. Making allowance for this circumstance, and dividing as before by $\sqrt{80}$, I find under the present head a probable error on the aggregate of marks of some 2 per cent.

The import of this conclusion may be illustrated by an extreme case. Suppose that at a Chinese examination the standard of excellence is the amount of Confucius learnt by heart. Say every chapter is of the same length (or at least counts for one). Then the real proficiency of the candidate is the number of verses (or aliquot parts) per chapter which he knows by heart, on an average extending over all the chapters of Confucius. But at an examination this real knowledge can only be tested by certain samples. Say eighty chapters are selected from Confucius by a perfectly random process, and a mark is assigned to the candidate equal to the proportion of each chapter which he knows. Upon an hypothesis thus mechanical, the Calculus of Probabilities is competent to determine the accuracy of the aggregate of eighty marks considered as a measure of the candidate's real knowledge. I must leave it to the reader to determine how nearly our system of examination conforms to the Chinese ideal.

Cumulating the error under the present heading with the account already furnished, we find for the aggregate of marks, considered as a test of the candidate's real proficiency, a probable error of about 3 per cent.; corresponding to a possible error of more than 9 per cent.

It is to be remembered that this estimate leaves out of account many elements of uncertainty which are too subtle for the Calculus of Probabilities to handle; such as the variation of the candidate's spirits, or the circumstance that the questions are not fairly representative of the subject—that some of the chapters set are not taken from Confucius, but from some apocryphal writing. It is to be remarked also that the error in appreciating the answers is reckoned from the supposed ideal mean which would be presented if a large number of competent sets of critics were to examine the work. If it is asked what difference is to be expected between the results of any two sets of examiners, the estimate of probable error must be somewhat increased.

It is interesting to consider in how many cases the obtaining or not obtaining honours[28] may be regarded as accidental. For the purpose of this computation we must form some computation as to the density of the candidates in the neighbourhood of the honour line. Without attempting to calculate accurately a datum which must vary for different examinations, I think it legitimate to assume that out of 1,000 candidates examined, there are among those who have passed at least 120 between the limits 1,800 and 2,000, and that the density is greater below and less above that tract. This supposition seems fairly representative of the statistics which are published in the reports of the Civil Service Commissioners.

There still remains the rather stiff problem to determine, out of a certain number of candidates who may just possibly be affected by the element of chance in the examination, how many are likely to have been affected in such wise as either to obtain or forfeit honours. By a rough approximative calculation I find that the most likely number of such displacements is about 30. This conclusion of course is not more exact than the premisses which the writer does not regard as more than provisional. He is much more confident about his methods than about his data. If it is thought that all the chance deviations which have been assumed are too large by half, then it will be proper to reduce the estimate from 30 to 15 (per thousand).

It must be explained also that the result found purports to be the most likely number to be displaced on an average of many years. It would be difficult to say what divergence from this average might be possible in any particular year. It might happen that out of the 1,000 examined in one year only 20 were put in the wrong

---

[28] Or office. See note to p. 608.

box. On the other hand it is conceivable that as many as 40 may have either gone up into a higher place, or taken with humiliation a lower one, than would have been assigned to them on the ideal hypothesis of the examination being conducted by a posse consisting of an indefinite number of competent critics. There are some of the pass men as good as some of the honour men; but, like the unsung brave "who lived before Agamemnon," they are huddled unknown amongst the ignominious throng, for want, not of talent, or learning, or industry, or judgment, but luck.

But let not the aspirant to academic honours be cast down by a first disappointment. Let him press on to higher and perhaps less aleatory examinations. He is playing a game in which superior skill must make itself felt in the long run. "Only go on long enough," as Dr. Venn says in his *Logic of Chance*, and the bias in favour of merit will be brought out.

It may be expected, perhaps, that one who points out an evil should prescribe a remedy. But I do not conceive that it is the part of the abstract reasoner to pronounce *de summâ rerum*. He has only to weigh a certain class of considerations with which he is technically conversant, not to balance all the advantages and disadvantages which should regulate the final judgment. This is now understood with respect to Economics, the professor of which, as General Walker says, should teach, not preach. Similarly the statistician may estimate the amount of accidental error due to a precipitate rate of examination, but he must leave it to senates and officials to determine whether it is worth risking a less accurate verdict for the sake of obtaining an earlier one.

Sticking to my technical last, I offer some recommendations, based upon purely statistical reasons, which I am quite prepared to find may be overborne by more practical considerations. In the first place the arrangement of the Honour List in an ostensible order of merit should be abandoned, when the distinctions thus drawn do not correspond with any degree of probability to real differences. The extent of each homogeneous alphabetically arranged class should be considerably greater than the probable error incident to the aggregate of marks upon which the arrangement is based. Thus, in the example which we have chosen, if an aggregate of marks between 2,000 and 2,100 is liable to a probable error of 50, then all or most of the candidates between these limits might be placed in one homogeneous class.

Again the science of statistics has something to say upon the functions of assistant examiners at public examinations. As to the duties of these subordinates with respect to the arrangement of the candidates who have passed, there appear to be two distinct theories; which may admit of intermediate shades and practical compromises.

(*a*) According to one view the function of the assistants is merely to select by a summary provisional marking those candidates who may possibly be deserving of honours. The papers thus selected are to be carefully re-examined *ab initio* by the chief examiner. Upon this view it is to be remarked that, in general and in the absence of a special precaution which will be mentioned, the papers selected for re-examination should be defined, not by the honour line, 2,000 (in the preliminary marks of the assistant), but by a figure considerably below that line. For it is to be conceived that the *ex hypothesi* rough marking of the assistants is affected with a very large probable error. Thus a paper which according to their measurement falls below the honour line by 100 or 150 marks, may in reality be above that line according to the more exact measurement of the chief examiner.[29]

The danger of using the assistant's returns without regard to their probable error, for the purpose of selecting the papers to be re-examined, may be avoided by prescribing that all the assistants should mark provisionally upon a much higher scale than that adopted finally. For then the provisional 1,700 would correspond, say, to the final 1,500, and thus the recommendation just made would be virtually carried out. Of this special arrangement it may be observed that, however excellent when consistently carried out, it is very liable to abuse. For if only some of the subjects are marked exceptionally high, or, if any of the exceptionally high marks are allowed to stand as final, it is clear that an enormous element of fortuitous fluctuation is introduced.

(*b*) According to another view of the assistant examiners' functions, the marks assigned by him are final, subject to the inspection of the chief examiner, and the revision of exceptional cases. According to this theory, or any intermediate plan in so far as it involves this principle, it may be expected that the sources of error which have been above described under the head of negligence[30] will become peculiarly operative.[31]

Where every plan for combining speed and accuracy seems open to some objection, it may be worth while considering whether it would be possible to utilise the statistical theorem, that the omission of *half* the answers in each subject is not likely to affect the result with more than an assignable percentage of error. The extent of error introduced by the omission will depend upon the definition of error for the purpose in hand; whether the deviation caused by the omission is reckoned (1) from that numerical aggregate which would be obtained by the selfsame set of examiners who have examined half the answers, if they were to complete the examination, or (2), from some other *quæsitum*, such as the aggregate marks which would be given by another set of examiners, or the ideally best marking of the work done, or the real proficiency of which that work may be regarded as a sample. For the present purpose of improving the machinery of a public examination like the matriculation, perhaps the *first* definition of the error caused by omitting to examine half the answers would be the properest.

---

[29] It should seem, according to this view, that, in order to avoid mistakes, it would be necessary for the chief examiners to re-examine completely and *de novo* the papers of about half the candidates who have passed.

[30] See p. 609.

[31] It will be noticed that the propositions in the text are quite hypothetical. Between the Scylla and Charybdis indicated by theory, practical sagacity has doubtless discovered some tolerably safe middle course. What may be safely affirmed of any public examination is, on the one hand, that any method which has commended itself to many able and experienced examiners and officials is fairly good; but that, on the other hand, it is not likely to be the best possible, if it has been adopted without reference to the theorems in Probabilities which evidently dominate the whole subject.

From data in my possession[32] I estimate this difference as equivalent to a probable error of 3 per cent. That is, if half the papers are examined and the aggregate of marks thus obtained is doubled, this result is not likely to differ by more than 3 per cent. from the true aggregate: meaning the one which the same examiners on going over all the papers would obtain. The reader may care to see some verifications of this theorem. In the annexed table each of the entries under the heading *All* are the sum of the marks for all the answers of a paper; the correponding entry headed *Half* is the sum of half the answers. The papers are all in the same subject, *English Language*. But it is legitimate, as before, to imagine that each batch of nine entries represents the marks of the same candidate in nine different subjects:—

All.	Half.	All.	Half.	All.	Half.
75	*35*	90	*55*	100	*55*
175	*110*	140	*57½*	145	*90*
215	*105*	20	*15*	175	*80*
105	*50*	120	*85*	155	*70*
165	*85*	160	*75*	110	*45*
155	*85*	165	*75*	70	*35*
130	*77½*	135	*67½*	70	*40*
175	*80*	80	*47½*	205	*120*
165	*82½*	45	*10*	185	*95*
1,360	*710*	955	*487½*	1,215	*630*
1,420	*2*	975	*2*	1,260	*2*
60	*1,420*	*20*	*975*	*45*	*1,260*
1360)6000(4·4		*955)2000(2·1*		*1215)4500(3·7*	
5440		*1910*		*3645*	
560		*90*		*855*	

The errors per cent. for the three batches are respectively 4·4, 2, and 3·7.

In the computation which has just been made, we have regarded the aggregate of marks for the whole of a candidate's answering as the true result, and have treated as error the deviation therefrom caused by the omission of half the answers. But now let us consider that even the complete aggregate is not to be regarded as perfect and final, but as a fallible measure of the true marking. Upon this view we have the striking theorem that the error incident to the whole is not *doubled* by the omission of a half, but only increased in the ratio 1·4 : 1. In the Calculus of Probabilities half is not so much inferior to the whole as common arithmetic

---

[32] Relative to the *inequality* of the average candidates answering.

would lead us to suppose. Thus if, agreeably to the estimate which has been made above, the total aggregate of marks (considered as representative of the marking ideally due to the work, or of the real proficiency of the candidate) is liable to an error of 2 or 3 per cent., then the error incident to an examination of half the answers is only 3·5 or 4·5—the number of answers being large, and the half selected at random.

It would be impossible for an outsider to say how these principles might best be utilised. One suggestion might be to spread some of the work which is now performed before the announcement of the candidates who have passed over the period which elapses before the declaration of honours. A very rapid glance might suffice to select the papers on the pluck line so to speak, and to secure for them the special and scrupulous consideration of their merits or demerits which they at present obtain. To complete the work of segregation a very rough estimate of the totals accruing to each candidate would probably be sufficient. Such an estimate might be obtained if the assistants were to read through and mark only *half* of the questions on each paper. The provisional figures thus obtained would not be likely to differ by a very wide percentage from the final arrangement. Suppose for instance it were a principle that no candidate whose total might entitle him to honours should be rejected on any single subject—without at least an indulgent reconsideration of his claims. The provisional returns of totals would be quite sufficient for this purpose. If the doubtful candidate did not obtain more than 1,800 marks in the provisional list, it might be safely assumed that he would not be entitled to more than 2,000 in the final arrangement. The goats having thus been separated from the sheep, the assortment of the latter might be completed at leisure.

A simpler plan of mitigating the ill effects of speed is to increase the number of examiners; which, as above shown, is not theoretically so much open to objection as might be supposed. For averting the detriment occasioned by plurality various ideas are suggested by the Calculus of Probabilities; which would require doubtless to be tempered with practical sagacity and knowledge of details before they could be immediately applicable. One suggestion is, that the answers of each candidate should be separable, as is the case, I believe, in some Cambridge examinations. Then the answers of the same candidate might be marked by different examiners. Thus, suppose there were four examiners to 1,000 candidates, each examiner would look over, not 250 integral papers of answers, making 2,500 answers, on the supposition of 10 answers in each paper; but the answers to the first two questions for one batch of 250 papers; the answers to the next couple of questions for another batch of papers, and so on. By this arrangement the influence of the personal equation would be so distributed as to become insensible.

Or it might be suggested that the marking of each examiner might be reduced in the office to a normal scale. Thus if 160 out of 300 were the proper mean for English History, and a batch of papers marked by one examiner presented a mean of 140, then the mark assigned to each of the papers in that batch should be either multiplied by $\frac{8}{7}\left(\frac{160}{140}\right)$, or rather should be increased by the addition of 20,[23] before it is combined with the candidate's marks in other subjects.

The question remains: How are we to know that 160 is the true mean for English History? One plan would be, if there were several examiners, to take the mean of their marks as the true mean. But probably it would be safer to assume that the average proficiency in English History remains constant from year to year; just as the average height of a large number of boys and girls taken from the same class is found by anthropometers to be constant. The proper mark to be assigned to that constant sum of average proficiency should be settled by collective wisdom once for all, or at least subject to revision at long intervals. The figure might be for instance 160 for English Literature, but for Mechanics 150.

In this connection it should be remarked that the practice which prevails in some educational quarters of basing the scale upon the answering of the most proficient candidate, by giving him full marks, is open to the gravest statistical objection. For the *maximum* of a statistical group is that character of it which is the most flux and variable. Look at the page in the registrar-general's returns in which the ratios of male to female births are recorded for different years and counties. You will find from year to year considerable differences in the *maximum* compared with the *mean* return. *A fortiori*, when we are dealing with 400 or 4,000 returns, instead of 40. If the ratios for the sub-districts, instead of the counties, were taken for each year, the fluctuation of the maximum would probably be greater.

An imaginary example may illustrate the principle. Suppose that the yard measure which is kept in the Tower, and indeed all other yard measures, were lost; and that in selecting recruits for the army it were necessary to reconstruct a standard, as it were measuring the conscripts by themselves. It would be a very bad plan to equate the height of the tallest candidate to a fixed number of feet; for instance, to call that observed height 7 feet, and then reason down to the measure of the other men. Thus, if 5 feet 4 be the minimum height admissible, we should reject all who were below that fraction of the tallest man's height, which results from dividing $5\frac{4}{12}$ by 7. By this plan the constitution of the army would be made the sport of accident. The arrival or death of a giant would convulse the standard. The enlistment of a Chang, supposing him, as is likely, four or five inches taller than the previously tallest man, would probably have the effect of disqualifying half the British army. But it would be far otherwise if we had taken the *mean*, instead of the *maximum*, as our basis. For there is reason to believe that the mean stature of any large body of adult men (or youths of the same age) taken at random from the general population, or the same class thereof, remains constant to within a very slight percentage of variation.

---

[23] See below, pp. 624 and 625.

An objection similar in kind though less in degree is applicable to a method of reduction which is described by Mr. Eve, and is I believe adopted in some public schools: namely, spreading out the marks actually given in such wise that "the top boy has the maximum and the last boy 0." That is, as I understand, suppose that full marks are 100, and that the marks actually assigned by an examiner range from 80 to 30, then the "top boy" who obtained 80 is raised to 100. The "last boy" who obtained 30 is depressed to zero. And any intermediate boy who has obtained say 50 is reduced to the mark $\frac{50-30}{80-30} \times 100$, that is 40.

Upon this plan it is to be remarked that it makes the average marking assigned to the batch under treatment dependent on the position of the "top boy" and the "last boy." But in any natural group,[34] such as examination-marks are known both by theory and observation to constitute, the extreme observations, the position of the "top boy" and the "last boy," are extremely variable characteristics; far more the sport of accident than the mean of the whole batch. Especially is this the case where the number of the batch is large. It is a curious circumstance that, whereas the method of *means*, as ours may be called, becomes better the larger the batch to which it is applied, the method of *extremes*, as the plan now in vogue may be called, tends to become worse;[35] absolutely more inaccurate, and therefore relatively to the rival method very much inferior.

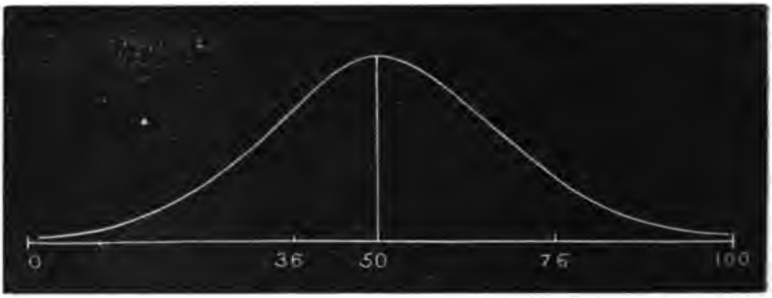
An example will probably make the argument clearer. Almost any set of statistical returns, and in particular those for the proportions of male to female births, may be regarded as resembling the marks in that they conform to the typical *law of error*. Let us see now how we should fare if we applied the *method of extremes* to these figures. Running my eye down some forty returns of the ratio of male to female births for the counties of England given by the registrar-general for the year 1879, I find the highest ratio is 1,073 (boys : 1,000 girls), and the lowest 976. The middle point between these is 1,024; whereas the *average*, the arithmetic mean of all the returns, is 1,036. Now we are to conceive that the group of statistics clusters about this average (according to the typical law so often referred to); and that this central point remains very nearly stable from batch to batch, from year to year. Thus, for 1880, the average is again 1,036; for 1881 it is 1,039; for 1882 it is 1,038; and for the ten years 1871-82 the mean value is 1,038.

---

[34] The reader cannot expect to fully appreciate this reasoning unless he will take the trouble of acquiring the conceptions which are appropriate to the subject. It is proper to suppose—not, as the ablest writer on the subject has conceived, that the boys tend to form "an arithmetic progression" in respect of industry and knowledge—but that they are grouped according to the *law of error*, the form of the *gensd'armes' hat* (above, pp. 600, 607). See Galton, *Hereditary Genius*, p. 33. See also Dr. Venn's *Logic of Chance*, *sub voce* "error." For a general exposition of the prevalence and properties of the *law of error*, see the writer's "Methods of Statistics," *Journal of the Royal Statistical Society*, Jubilee volume, 1885; also "Mathematical Theory of Banking," Ibid., March, 1888.

[35] The degree of error incurred by taking the middle point between the two extreme observations as the true mean—for that is what the fashionable method of reduction comes to—has not, as far as I know, been determined by the mathematicians. A rough solution of the problem may be derived from a theorem given by the present writer in a paper on "Problems in Probabilities" (*Lond. Phil. Mag.*, 1886). At p. 374, substitute $\frac{n-1}{n}$ for $\frac{3}{4}$, and thus ascertain the error of treating each of the extreme (positive and negative) observations as, so to speak, in its right, its most likely, place; and thence deduce the error of putting the middle between those extremes or the true mean. The result justifies the remarks above made.

Suppose now for the sake of illustration that these statistics were marks. My method would be to identify this stable centre of the group, say 1,038, with that mark which it seems desirable to assign to the constant average, shall we say 50, where 100 is full marks.



Thus the same figure is assigned to the presumably same average quality of work from year to year. But, according to the fashionable method of extremes, the centre of the scale is for the year 1879 put at the figure 1,024, that is on my scale (represented by the horizontal line in the annexed figure) 36. For 1,024 is 14 below 1,038, which I have identified with my 50. Now those who put my 36 as the central point, that is make it *their* 50, must regard the hump of the curve, the bulk of the candidates, as enjoying a mark of 64. In 1880 by a parity of accident the average marking in the subject goes up to 67. But in 1881 the luck turns. For in this year the "top boy" happens to be (in the unreduced scale) 1,116, and the "last boy" 1,012. Accordingly the computed centre is 1,064, that is 26 above the real centre. From this imaginary centre those who are at the real centre must seem to be 26 below 50, that is 24. The marks in the subject therefore go down 26 per cent. in 1881; though the average quality of the answering is presumably the same; or has not (as in the case of the sex-ratios) varied by more than 1 or 2 per cent.

It is to be remarked also that there is another character even more constant than the mean, that is the *dispersion* of a group, "the probable error," which measures the deviation of the individuals from the *mean*. This coefficient is found to remain constant, even when the mean varies. Thus it is not sensibly different for the height-measurement of Americans, Englishmen, and Italians,[36] though there is considerable difference between the mean height of these nations. In fact, by extracting this coefficient from the measurements of a large group of recruits, we might reconstruct the linear measure if it were lost with accuracy sufficient for all the practical purposes of life.

It seems allowable to transfer these inductions of physical science to the psychical sphere. Not only then is it safe and proper to reduce the average of each examiner's marks in the manner above described. But also it is theoretically proper to contract or deploy the curve which each set of marks constitutes, in such wise that the dispersion may become equal to that coefficient which has been found by long experience to be the true or ideally best dispersion. Thus, suppose that for a certain subject, *English Language*, the proper average was 168 (300 being full marks), and the proper dispersion corresponded to a "probable error" of 43. Suppose, I say, that these measures which I observed in the case of an actual set of marks given by an experienced examiner to a batch of 340 papers, were settled as the ideally best figures. Now let another set of marks given by another examiner, as in a case which I inspected, average 145, with a dispersion measured by the probable error 31. It might be proper to "reduce" the latter set by (1) adding 20 to the marks of each paper; (2) increasing the distance of each mark from the average in the ratio 31 : 43.[37]

In greater detail the following is the plan which I recommend. For the scientific reduction of any set of marks there are required two characteristics, namely, the *mean* of the set and its *dispersion*. There must be given also the ideal mean and dispersion to which the reduced curve is to conform. Both the real and the ideal coefficients are to be ascertained in much the same way. Let there be a large set of marks, say 200 (or generally *n*) in number, assigned to different papers by the same examiners. The marks might range from 20 to 280; as in a case which I have examined (full marks being 300). Rearrange these figures in the order of magnitude, thus—

$$\begin{array}{lll} 20,\ 25,\ 30,\ 45,\ 70 & & 230,\ 250,\ 280. \\ 70 & \cdots\cdots & 230 \end{array}$$

(noting the double or multiple occurrence of certain marks). Take the fiftieth (or generally the $\frac{n}{4}$th) mark in the ascending order of magnitude, and find the number intermediate between that mark and the next in order. In the example before me the $\frac{n}{4}$th mark is 110 and the $\left(\frac{n}{4}+1\right)^{\text{th}}$ 115. Accordingly 112½ is the point required, the *quartile* as Mr. Galton calls it. Proceed similarly with the hundredth and hundred-and-first mark (the $\frac{n}{2}$ and $\left(\frac{n}{2}+1\right)^{\text{th.}}$ In the example before me the $\frac{n}{2}$ and the $\left(\frac{n}{2}+1\right)^{\text{th}}$ marks are both 145. The required point is therefore 145. This is the *mean* of the set. Again operate similarly on the hundred-and-fiftieth and hundred-and-fifty-first marks. In the case before me the $\frac{n}{4}$ and the $\left(\frac{n}{4}+1\right)$ are both 175. The number thus determined forms the *upper quartile*. Subtract the lower from the upper quartile, thus, $175 - 112\frac{1}{2} = 62\frac{1}{2}$. Take the half of that difference, 31 nearly, as the *probable error* which measures the dispersion of the set. We have thus the real mean and the real dispersion of the set.

---

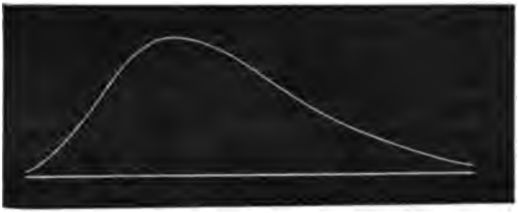
[36] See "Methods of Statistics," by the present writer, *Journal of the Statistical Society*, Jubilee vol., 1885.

[37] I understand that "reduction" of some sort is practised at one at least of the Cambridge Tripos Examinations and at public schools.

To determine the ideal mean and the ideal dispersion, the ideal method would be to perform the operation which has been described upon several large sets of marks, each set having been assigned to papers of the same calibre as those under examination by a different but equally competent examiner. However, practical sagacity may abbreviate this ideal method. With regard to the *mean* in particular it is competent to official wisdom, as above suggested, to lay down somewhat arbitrarily the value to be assigned to the average knowledge in any subject. In fact there is thus a ready mode of slightly *weighting* one subject without disturbing the existing scheme of regulations. But, with regard to the dispersion to be prescribed, I should think the best plan really would be to average the results presented in each subject by the marking of different competent examiners. There might indeed be some advantage in prescribing a uniform dispersion for all the subjects.

The ideal coefficients being given, and the real mean and dispersion for the batch under treatment having been found, proceed thus: (1). Add to each mark the difference between the real and the ideal mean; (2). Increase the distance of each thus transformed mark from the (ideal) mean in the ratio of the ideal to the real dispersion. For example, as in the case mentioned, let the observed mean be 145 and the observed (probable error measuring) dispersion be 31. And let the ideal mean be 165, and the ideal dispersion be 42. Then, 100 being an actual mark, the reduced mark is found first by adding 20 to 100; then increasing the distance between 120 and 165, namely 45, in the ratio $\frac{42}{31}$. Now $\frac{42}{31}\,45 = 61$. And $165 - 61 = 104$. The reduced mark is therefore 104. Had 200 been the reducend, the reduced mark would be $239\left[= 165 + \frac{42}{31}\,(220 - 165)\right]$.

It must be confessed however that, before "reduction" can be effected with perfect precision, the properties of examination-curves must be more accurately determined by observation. The important question is whether marks group themselves according to the regular *gensd'armes' hat* which most anthropometrical statistics present; or rather according to a modified shape, a sort of hat blown on one side agreeably to the law of Mr. Galton and other



distinguished statisticians, with respect to the errors or deviations in psychical quantities.

To determine this point would require a laborious collation of statistics such as the results of public examinations must present, a labour which it would be quite worth the while of an intelligent public body to pay for. I have examined a limited number of marks, as already mentioned, without discovering any decided trace of the asymmetry which the Feçhner-Galton hypothesis postulates.[38] Dr. Charles Roberts and Mr. Galton himself have obtained similar results.

These considerations lead up to another suggestion. Supposing the law advocated by Mr. Galton to prevail in fact, it may be doubted whether the present method of combining the marks in the different subjects is theoretically the best. Let us assume as the essential principle of the matriculation, or any similar public, examination, that the candidate is more deserving the higher the number of marks he obtains on an average of several subjects (under the condition of obtaining a certain minimum of marks in each subject). And let us further assume—what is very doubtful—that this ideal is a correct one. Then it should seem that, upon the Galtonian hypothesis, the proper method of combining the marks in each subject would be, not to take their sum, their arithmetical mean as we say, multiplied by their number, say ten, but to take the *geometrical mean;* raised to the tenth power, if large numbers are desired. It is possible that many of the elements of chance above analysed would be reduced by this process.

I do not, however, attach any practical importance to this suggestion. For, even if its ground, the asymmetry of examination-curves, were better established by experience, the plan would still be open to three fatal objections. First, it would entail not only a quantity but a quality of official labour which could not be reckoned upon. Secondly, it violates a condition which Mill lays down with respect to the basis of the currency, and which is equally applicable to other public regulations, that it should be "intelligible to the most untaught capacity." In fine, it has the defect which the same author has ascribed to "logical" constitutions. The imperfection of the fundamental principle would be intensified. Mediocrity of general knowledge would be favoured in preference to special talent, even more than at present.

---

[38] See above, p. 607. It is true that the upper extremities of the curves frequently exhibit a tendency to diverge from the Mean further than is consistent with the regulation form. But the degree of asymmetry is not such as it would be worth while attending to in practice.

One more suggestion occurs. Even when we have abolished the order of merit within the honour class, there remains an inevitable injustice in excluding those who are just below the boundary line of that class. Can nothing be done to mitigate this hardship? Ought not the excluded candidates to have at least a chance of entering within the pale, corresponding to the probability that they really deserve to be there? Might it not be permitted to those who are in the neighbourhood of the boundary to *ballot* for a certain number of places? In this lottery the chances should not be equal for all, but graduated according to the probability above determined that each candidate ought by rights to be in the honours class. The Calculus affords a neat expression for this probability. Let p be the probable error incident to an aggregate of marks in the neighbourhood of 1,700. And let q be the number of marks by which the candidate falls short of or exceeds that limit. Then the probability that the candidate is in the wrong box is $\frac{1}{2}\left[1-\theta\left(\frac{p}{\cdot 477q}\right)\right]$: where θ is a well known integral (of the error function) which is tabulated in the books on Probabilities. The probability thus measured ranges from $\frac{1}{2}$, an even chance, to zero, which represents the certainty that candidates at a certain distance from the Honour line are placed in the right category. It would be easy to contrive a composite sort of ballot box, by means of which the examiners, met in solemn conclave, should settle the position of the candidates about whom there might be any doubt.

This elegant piece of mechanism may have attractions for the admirers of educational machinery. But on reflection it will be found that this additional wheel is superfluous. The candidates have already had their chance.[39] A public examination is already a sort of lottery of the graduated species which I have been describing: one in which the chances are not equal, but are better for the more deserving; increasing with the real merit of the candidates up to a degree of probability which amounts to certainty. It is a species of sortition infinitely preferable to the ancient method of casting lots for honours and offices.

---

[39] Mr. T. H. Elliott, Secretary for Section F of the British Association, commenting upon this paper, has suggested that candidates who come out just below the line might be allowed to compete at a future examination on more favourable conditions than shall be accorded to others who have not thus created a presumption in their own favour. To which I add that the extent of start, so to speak, which at the second race should be allowed to those who have been near winning a prize at the first race should, so far as practicable, be regulated according to the degree of probability that each candidate really deserved to win a prize at the first race. In urging the need of some such remedy Mr. Elliott dwelt on the anomaly that, at many of the Civil Service Examinations, a serious difference in the income and position of the candidates turns upon differences in the aggregate of marks which, according to the reasoning in this paper, must be regarded as largely or altogether accidental.

APPENDIX.

The object of this appendix is to illustrate the theorems in Probabilities which are employed in the paper. The first principle which underlies the whole reasoning is the fundamental law of statistics that large numbers formed by the addition of several items are more stable and accurate than the particular items out of which they are formed. Thus, if a number of parcels are separately weighed, and the weights assigned are added, the sum of these figures is a better measure of the total bulk than each particular figure is of the corresponding parcel. More exactly, the *error* of the whole is less than the error of a part in the ratio of the *square root* of the number of parts; supposing the parts or parcels to be about equal. "Error" is here regarded as a *percentage* of the object measured. The *absolute* error incident to the measurement of the total bulk is greater than that to which each of the parcels is liable in the same ratio that the relative error is less.[40]

It is to be explained also that the proposition is true only in the long run, not for any particular measurement. It might happen that on a particular occasion the measurement of a pound weight was almost perfectly accurate, while the result of adding several measurements of parcels each weighing about a pound was (not only absolutely, but relatively or per cent. of the total bulk) much less accurate. But this is not likely to occur often. To complete the enunciation of the theory, there is required some definition of what is meant by "error in the long run." Two conceptions have been noticed in the paper, corresponding to the technical terms "probable error" and "average error." Suppose several measurements of a parcel weighing a pound. The figures might run thus in ounces: $17\frac{1}{2}$, $15\frac{3}{4}$, 15, 14, $16\frac{1}{2}$, $16\frac{3}{4}$, $14\frac{3}{4}$ . . . . . . Then the series of errors (whether in excess or defect) is $1\frac{1}{2}$, $\frac{1}{4}$, 1, 2, $\frac{1}{2}$, $\frac{3}{4}$, $1\frac{1}{4}$ . . . . . . It appears that of these figures there are just as many above as below *unity;* and if this should continue to be true when we prolong the series indefinitely, then 1 is said to be the *probable error.* Or we might have taken as the measure of error in the long run the *arithmetic mean* of the series of errors, *e.g.*, $\frac{1\frac{1}{2} + \frac{1}{4} + 1 + 2 + \frac{1}{2} + \frac{3}{4} + 1\frac{1}{4}}{7}$ (= 1·033 . . . . . .). There is yet another species of Mean Error which may be employed. Instead of taking the average of the errors we might take the square root of their average square, *e.g.*, $\sqrt{\frac{\frac{9}{4} + \frac{1}{16} + 1 + 4 + \frac{1}{4} + \frac{9}{16} + \frac{25}{16}}{7}}$ $= \sqrt{1\cdot38} = 1\cdot2$ nearly. It is for the most part indifferent in which of these ways we estimate the magnitude of error. However in certain cases the theory is only true when we understand error in the long run, mean error, in the *third* sense.

I propose now to verify the theorem which has been enunciated by means of certain statistics which the general reader can easily obtain for himself in indefinitely large quantities. Suppose you take a number of digits at random from the pages of some mathematical or statistical table; and again another and another batch of the same number, say *n*. The figure towards which this series of batches converges, and which each batch may be said to measure, is 4·5 *n*. Thus, if *n* is 10, the sum of 10 digits taken at random may be regarded as representing the figure 45. That is the mean towards which a series of such sums converges. Here then we have a simple method of verifying our theorem. Regarding the sum of *n* digits as the measurement of a parcel whose real weight, so to speak, is 4·5 *n*, we have to show that by aggregating *m* such measurements we obtain a better measure of (the aggregate bulk) 4·5 *nm* than the sum of *n* digits is of (the particular parcel) 4·5 *n*.

---

[40] The total bulk is proportioned simply to the number of items, the (absolute) error to the *square root* of that number.

I begin with the easier[41] case in which *n* is pretty large, for example, *ten*. In the annexed table each of the 81 figures in the

TABLE I.

1 Sums of 10 Digits.	2 Differences.	3 Squares of Differences.	1 Sums of 10 Digits.	2 Differences.	3 Squares of Differences.	1 Sums of 10 Digits.	2 Differences.	3 Squares of Differences.
48	3	9	58	13	169	36	9	81
50	5	25	40	5	25	41	4	16
33	12	144	51	6	36	39	6	36
59	14	196	50	5	25	45	0	0
31	14	196	50	5	25	31	14	196
30	15	225	47	2	4	53	8	64
43	2	4	58	13	169	45	0	0
32	13	169	57	12	144	46	1	1
40	5	25	58	13	169	38	7	49
37	8	64	54	17	81	38	7	49
42	3	9	49	4	16	43	2	4
30	15	225	46	1	1	33	12	144
64	19	381	44	1	1	59	14	196
34	11	121	57	12	144	46	1	1
27	18	324	38	7	49	52	7	49
30	15	225	41	4	16	38	7	49
42	3	9	57	12	144	50	5	25
41	4	16	46	1	1	57	12	144
46	1	1	50	5	25	38	7	49
42	3	9	42	3	9	34	11	121
36	9	81	61	16	256	62	17	289
47	2	4	44	1	1	49	4	16
49	4	16	52	7	49	45	0	0
51	6	36	40	5	25	56	11	121
52	7	49	71	26	676	44	1	1
46	1	1	41	5	16	32	13	167
52	7	49	40	4	25	29	16	256
Sums .. 1,134	219	2,613	1,342	207	2,301	1,179	196	2,126
Means 42	8	97	49·7	7·7	85·2	43·7	7·3	79

---

[41] See below, p. 631.

Résumé of TABLE I.

	Sums of 10 Digits.	Differences.	Squares of Differences.
Grand total	3,655	622	7,040
General means	45·1	7·7	87

column headed 1 is obtained by adding together ten digits taken at random from a table of logarithms. The Mean of this set of figures is, as it ought to be, nearly 45. In the column headed 2 is given the *error* of each of the figures in the first column, namely, the difference between each of these figures and the Mean which they may be said to represent, namely, 45. The average of these eighty-one errors proves to be 7·7. The average per cent. (of the mean value 45) is 17. We have now to show that this average percentage error is greater than the corresponding error of $m \times 10$ digits in the ratio $\sqrt{m}$ to 1.

I first take m as 10, and show in Table II the errors incident to sums of 10×10 digits. The first column contains 25 sums of 100 digits taken at random; their mean approaching, as it should, 450. The second column shows the errors or differences between each figure in the first column and 450. These errors are each qualified with a *sign* indicating excess or defect; but in taking the average of the errors it is not proper to attend to the sign, but only to the absolute quantity. The average error is 25·4; and accordingly the average per cent. (of 450) is 5·6. Now this is just what the theory requires. The average error per cent. for the second column of Table I ought to be $\sqrt{10}$, or about 3·1 times greater than the corresponding result for Table II. Now the average error per cent. for Column 2 of Table I is, as we have just shown, 17. And $3·1 \times 5·6 = 17$ nearly.

Another verification is afforded by adding each consecutive pair of errors in Column 2 of Table II, *not abstracting the signs.* We have thus in effect a series of errors incident to sums of 200 digits taken at random. The average error per cent. thus presented ought to be about $\sqrt{20}$ times less than the average error presented by Column 2 in Table I. And so it is: the figures being respectively 3·7 ($= 100\frac{33}{900}$) and 17. So far we have taken as our test of erroneousness the average error obtained in the long run. The theory may equally be verified if we look to the "probable error" presented by the different rows of figures. In Column 2 of Table I we find that half the number of entries are above and half below 7. That then is the probable error, absolutely speaking; the relative or percentage probable error being 15·5 ($= 100\frac{7}{45}$). The corresponding probable error for Column 2 of Table II is 5·6, and for Column 3 of the same table 3·4; being respectively nearly $\sqrt{10}$ and $\sqrt{20}$ less than the corresponding probable error for the first table.

TABLE II.

1 Sums of 100 Digits.	2 Col. 1 *minus* 450.	3 Sums of Pairs of Col. 2.	4 Sums of 50 Digits.	5 Col. 4 Doubled.	6 Col. 5, *minus* 450.	7 Sums of Pairs in Col. 6.	8 Differences between Col. 5 and Col. 1.
482	+ 32	15	*235*	470	+ 20	12	*12*
403	− 47		*221*	442	− 8		*39*
513	+ 63	32	*251*	502	+ 52	50	*11*
419	− 31		*224*	448	− 2		*29*
495	+ 45	31	*239*	478	+ 28	38	*17*
436	− 14		*192*	384	− 66		*42*
453	+ 2	26	*233*	466	+ 16	78	*13*
473	+ 23		*256*	512	+ 62		*39*
458	+ 8	37	*224*	448	− 2	48	*10*
479	+ 29		*250*	500	+ 50		*21*
421	− 29	36	*201*	402	− 48	80	*19*
443	− 7		*209*	418	− 32		*25*
453	+ 3	26	*231*	462	+ 12	36	*9*
421	− 29		*237*	474	+ 24		*53*
497	+ 47	57	*233*	466	+ 16	38	*31*
460	+ 10		*236*	472	+ 22		*12*
456	+ 6	26	*230*	460	+ 10	6	*4*
418	− 32		*217*	434	− 16		*16*
458	+ 8	24	*234*	468	+ 18	58	*10*
418	− 32		*187*	374	− 76		*44*
474	+ 24	7	*255*	510	+ 60	14	*36*
433	− 17		*202*	404	− 46		*29*
435	− 15	78	*218*	436	− 14	72	*1*
387	− 63		*196*	392	− 58		*5*
431	− 19	—	*217*	434	− 16	—	*3*
Sums .. 11,216	636	395	—	11,256	774	530	*530**
Means 449	25·4	33	—	450	31	44	*21·2*

* The identity of this number with the corresponding entry in Col. 7 is accidental.

There remains still another verification afforded by our *third* test of erroneousness, the square-root of the Mean-square of error, what we may call[42] the Mean Error *par excellence.* The estimate of this is shown in the third column of Table I. The Mean square of differences or errors proves to be 87. Whence the absolute Mean error is 9·3 (= $\sqrt{87}$), and the percentage mean error is 20·7 (= 100 × $\frac{9\cdot3}{45}$).

This figure is to be compared with the result of performing the same operation on the entries in Table II. Or perhaps, without taking that trouble, I may be allowed to utilise a well-known theorem that when there are added together a large number of items selected at random like the 100 or 200 digits which go to the batches in Table II, then the aggregates so formed fluctuate according to the typical *law of error* to which reference has been frequently made in the course of the paper. Now it is a property

---

[42] With Gauss and a large school of German writers.

Google

of this law that the *mean error* (in the special sense above defined) $= 1\cdot25 \times$ Average error.[43] Now the average error per cent. for aggregates of 100 has been found to be about 5·6 ($= 100\frac{25\cdot4}{45}$). Accordingly the *Mean error* for such aggregates must be about 6 ($= 1\cdot25 \times 5\cdot6$), that is, as it ought to be, less than the mean percentage error for aggregates of only 10 digits, namely, 20·7, in the ratio of $1 : \sqrt{10}$ nearly. Similarly the mean error per cent. for aggregates of 200, which is found to be 4·6 ($= 1\cdot25 \times 100\frac{33}{90}$), is less than the mean error for aggregates of 10 in the ratio of about $1 : \sqrt{20}$. The number of batches which we have adduced is not sufficient to bring out these relations with very great accuracy. But, if the reader likes for himself to construct additional batches, the longer he continues the series, the more nearly will our theorems be verified.

The examples which we have hitherto given had this convenience, that each of our "items," being itself a compound of several parts, namely, 10 digits, fluctuates approximately at least according to the typical law of error. But, as noticed in the paper,[44] this is not always to be assumed. Although it is the rule for errors to fluctuate according to the typical law, yet exceptional species may occur. In this case our theorem is not true in quite so unlimited a sense as in the normal case; it is true only when we take as the measure of erroneousness the *Mean error* in the sense above defined.

Let us take as an example a set of figures each formed by putting together *two* random digits. These statistics do not comply with the typical law so well as the aggregates of 10 digits do. Yet it is equally true that the *Mean error* (in the special sense here adopted) for these binary sums is greater than the mean error for aggregates formed by adding n such sums in the ratio of $\sqrt{n} : 1$. Table III is designed to verify the theorem thus limited.

In this table the first column contains 81 entries, each formed by adding 2 digits taken at random. The average of these entries is 9·3, being very nearly $2 \times 4\cdot5$, or 9, the value to which binary sums converge. The second column contains differences (without regard to sign) between the Mean value 9 and each of the entries in the first column. The third column contains squares of differences. The Mean square is 17·4, the square root of the Mean square, or the Mean error, is 4·2, and the Mean error per cent. is 46·6 ($= 100\frac{4\cdot2}{9}$).

We have now to show that this Mean error is about $\sqrt{m}$ times greater than the similarly constituted Mean error for aggregates of m binary sums, or in other words 2 m digits. First let us take m a small number, *five*. Then by Table I we find that the Mean error per cent. for such aggregates is 20·7 ($= 100\frac{9\cdot3}{45}$), that is, roughly, $\sqrt{5}$ times less than the Mean error presented by Table III, which, as shown in the last paragraph, is 46·6.

---

[43] $\sqrt{\frac{\pi}{2}} = 1\cdot25$ nearly.

[44] See p. 604.

TABLE III.

1 Pairs of Digits	2 Differences.	3 Squares of Differences.	1 Pairs of Digits.	2 Differences.	3 Squares of Differences.	1 Pairs f Digits.	2 Differences.	3 Squares of Differences.
8	1	1	14	5	25	7	2	4
12	3	9	14	5	25	5	4	16
1	8	64	12	3	9	13	4	16
5	4	16	11	2	4	8	1	1
14	5	25	10	1	1	6	3	9
10	1	1	18	9	81	11	2	4
11	2	4	8	1	1	9	0	0
13	4	16	14	5	25	9	0	0
9	0	0	7	2	4	8	1	1
14	5	25	17	8	64	5	4	16
2	7	47	10	1	1	4	8	25
9	0	0	11	2	4	8	1	1
15	6	36	1	8	64	3	6	36
10	1	1	15	6	36	6	3	9
5	4	16	8	1	1	2	7	49
12	3	9	9	0	0	19	0	0
10	1	1	10	1	1	6	3	7
14	5	25	8	1	1	9	0	0
11	2	4	14	5	25	0	9	81
9	0	0	6	3	9	12	3	9
13	4	16	9	0	0	11	2	4
10	1	1	8	1	1	7	2	4
7	2	4	13	4	16	15	6	36
5	4	16	2	7	49	5	4	16
15	6	36	2	7	49	17	8	64
5	4	16	4	5	25	16	7	49
14	5	25	11	2	4	6	3	9
Sums 263	88	416	266	95	526	227	90	468
Means 9·7	—	15·4	9·8	—	194	8·4	—	17·3

Résumé of TABLE III.

	Pairs of Digits.	Differences.	Squares of Differences.
Grand total	756	273	1,409
General means	9·3	3·4	17·4

Next let us take *m* large, namely, *fifty* or a *hundred.* Table II supplies the corresponding mean errors, if we are allowed to utilise the theorem above cited that for such aggregates the ***Mean error*** is 1·25 × the ***Average error*** nearly. Thus we have, as aforesaid, the Mean error per cent. for batches of 100 and 200 respectively 5·6 and 4·3; being, as they ought to be, nearly $\sqrt{50}$ and $\sqrt{100}$ times less than the Mean error for sums of 2 digits, namely, 46·6. Our theorem then is equally verified whether there are a small number of "items," as when we take for our ultimate element, so to speak, a whole "paper" in each subject, or whether there are a large number of items, as when we regard each of some 80 answers as separately liable to error.

The next theorem which has been employed in the paper, or rather the next corollary of the one principle which governs the higher theory of statistics, may be stated as follows: Given a set of statistics purporting to measure some one object, or to represent some mean value to which the series if continued indefinitely long would converge, the accuracy or representative worth of the average or aggregate of the given figures may be conjectured by inspection of the statistics, from the run of the figures. Take for example the 80 entries in the first column of Table I. By operating on these figures we are able to discover what is the *error* (probable, average, or mean) incident to statistics of that character. From that datum we can derive the error of an aggregate of 80 such statistics. It is $\sqrt{80}$ times the error incident to a single return. This theorem is true of any batch of 80 produced under similar conditions, and in particular of the given batch. Table I read with Table II shows that the required coefficient has been with sufficient approximation elicited from the given batch of 80 figures in Column 1 of Table I. For the coefficients of error deduced from Table I are consilient with the observations registered in Table II. Thus the *average* error per cent. for decades as deduced from Table II is 17. Whence according to theory the average error per cent. of an aggregate of 10 decades ought to be $17 \div \sqrt{10} = 5{\cdot}4$. Now by Table II the average error for sums of 100 digits is absolutely 25·4, and therefore relatively (to the mean 450) 5·6.

It is true that in operating on the given series we have used a datum of a sort which would not be always given, namely, our knowledge of what we have called the true mean. But if we had used the *apparent mean* (the average of Column 1 of Table II) our computation of the error would have been not much less, perhaps even more, accurate. It is credible therefore that by inspection of a candidate's answering, from the degree of inequality which the marks present, we can conjecture the worth of the total aggregate of marks, considered as representative of the candidate's real proficiency.

The next proposition relates to the provisional use of half (or some fraction) of a candidate's answering. If the aggregate of marks assigned to half the answers be doubled, that result is not likely to differ by more than assignable deviation from the result of a complete examination of the answers by the same examiner. The extent of the deviation can be assigned by inspection of a number of statistics of the same sort—in particular the marks assigned to half the total number of answers, supposing them very numerous. This proposition is verified in Table II. Each entry in Column 1 of that table contains the sum of 50 pairs of digits; as it were the result of a complete examination, if each pair represents a mark, and there are 50 answers. The corresponding entry in Column 5 is formed by taking 25 of those marks—that is the sum of fifty digits given in Column 4—and doubling that sum. Column 8 shows the difference between the two estimates. It will be seen that the differences (between the whole and double the half) average 21·2. This result might be predicted (approximately) from inspection of a batch of statistics such as we have given in Table III. For, according to theory, the average deviation between the sum of 50 pairs and twice the sum of any 25 out of those pairs should be $\sqrt{50}$ × Mean-error-of-a-pair ÷ 1·25.[45] Now the Mean error of a pair was found from Table III to be $\sqrt{17{\cdot}4}$ or 4·2. Well, then, $7 \times 4{\cdot}2 \div 1{\cdot}25 = 23{\cdot}7$, a result which roughly corresponds with the observed 21·2.[46]

In the next proposition, both half and the whole examination being regarded as an imperfect measure of some ulterior entity, such as the candidate's real proficiency, it is asserted that the half is not twice as bad a measure as the whole, but worse only in the ratio $\sqrt{2} : 1$. This proposition is verified by a comparison of Columns 1 and 5 of Table II. Regarding each of them as a measure of the mean, that is 450, we see that the error of Column 5 is on an average greater in about the ratio 1·2 : 1. Which is nearly what was to be demonstrated.

The most important remaining theorem relates to the use of the maximum and minimum marks to determine the "scale" on which a reduced system of marking is to be graduated. The precariousness of this procedure is partially exemplified by our figures. Thus in Table I the maximum decade is 71 and the minimum 29. The mean position determined from these extremes is 50: being out from the true Mean to the extent of 5. The inaccuracy of this result as compared with the Arithmetic Mean of the column may be exhibited by the statement that the chances against that Mean (of 81 decades) being out to the extent of 5 are hundreds of thousands to one. Table II does not afford an illustration of the theory; for as it happens the larger error in excess + 63 is exactly compensated by the largest error in defect, which is − 63. This is an accidental circumstance very unlikely to be repeated if we took several batches of 25 numbers formed like those in Table II.

Nor does Table III present an illustration of the theory; but in this case the deficiency is not accidental. If we take the maximum and minimum of the whole Column 1 in that table, we find respectively 0 and 17. Whence we have the true mean 8·5. Moreover it is evident that whenever we take a pretty long series of *pairs* of digits, there must occur an even more accurate result. About once in a series of a hundred such statistics there may be expected an 18 (= 9 + 9) and an 0 (= 0 + 0), the mean of which is 9.

The *rationale* of this failure is that binary sums of digits are not grouped according to the typical law which theoretically allows an occasional deviation from the central value to any extent. Practically, however, an actual group of errors or statistics cannot be supposed capable of diverging beyond a certain finite extent. Hence it follows that in any concrete instance our theorem would only be true for groups of a certain not unlimited number.

---

[45] The divisor 1·25 appears in virtue of the theory noticed at p. 631. It will be observed that the error referred to in the text is absolute, not per cent.

[46] The average error found in Column 2 of Table II is a quantity of the same order.

From these remarks it follows that, when a given set of marks presents both full marks (*e.g.*, 300) and zero, then there is comparatively little danger in determining the extreme points of the scale by those data (*e.g.*, equating 300 to 100). But it is far otherwise when the given marks constitute (as I find is often the case) a group not extending on either side to the utmost possible limit; say terminating above at 200, and below at 60. To "reduce" such marks upon the principle recommended by Mr. Eve would be liable to the danger which we have indicated. Indeed the actual result would probably be even worse than the theory predicts. For, as Dr. Charles Roberts has pointed out in relation to some remarkable statistics of eyesight, the *extremes* of a natural group are apt to be very irregular. There is some reason to believe that giants and dwarfs are more numerous and less regular than theory predicts. In this case to determine the type by means of the maximum and minimum observation would be an even more precarious proceeding than theory pronounces.

This incident may serve to warn us in conclusion with what caution abstract theory is to be applied to actual statistics. In statistical, as in economical, science general reasoning should be combined with attention to the specialities of each particular case.

II.—*Statistics of Incomes in Prussia, Saxony, and the United Kingdom.* (Translated from the *Bulletin de Statistique et de Legislation Comparée*, May, 1888.)

Soetbeer in his valuable work which has recently been published, entitled *Zur Einkommenstatistik von Preussen, Sachsen, und Grosbritannien, nebst Bemerkungen über Einkommenbesteuerung*, gives the following interesting particulars respecting the movement of incomes in Prussia, Saxony, and the United Kingdom, particulars which are of considerable importance as supplementing data of the same nature supplied by other well-known writers and economists.

The general system of the taxation of incomes which is applied in Prussia, Saxony, and the United Kingdom furnishes the necessary basis for an estimate of the progress of wealth, and by comparing the estimates of private fortunes in these countries we are enabled to form an approximate idea of their respective wealth.

A reference to the following tabular statements will show for the years 1875, 1880, and 1885 the movement of the population in the above-mentioned countries, the aggregate incomes of those populations, and the mean income per head:—

Population.

Years.	Prussia.		Saxony.		United Kingdom.	
	Number.	Increase over 1875.	Number.	Increase over 1875.	Number.	Increase over 1875.
		Per cnt.		Per cnt.		Per cnt.
1875	25,742,404	—	2,760,586	—	33,019,000	—
'80	27,279,111	6·0	2,972,805	7·7	34,788,000	5·3
'85	28,318,470	10·0	3,182,003	15·3	36,521,000	10·6

Estimated Total Incomes of the Population.

Years.	Prussia.		Saxony.		United Kingdom.	
	Incomes.	Increase over 1875.	Incomes.	Increase over 1880.	Incomes.	Increase over 1875.
	Mln. £	Per cnt.	Mln. £	Per cnt.	Mln. £	Per cnt.
1875	392·8	—	—	—	1,159·0	—
'80	411·4	4·7	49·4	—	1,170·5	1·0
'85	444·2	13·7	59·2	20·9	1,259·0	8·7

Average Income per Head of the Population.

Years.	Prussia.		Saxony.		United Kingdom.	
	Average Income.	Increase or Decrease from 1875.	Average Income.	Increase or Decrease from 1880.	Average Income.	Increase or Decrease from 1875.
	£	Per cnt.	£	Per cnt.	£	Per cnt.
1875	15·2	—	—	—	35·1	—
'80	15·1	− 1·0	16·6	—	33·6	− 4·3
'85	15·7	+ 3·0	18·7	+ 13·0	34·5	− 1·9

The above estimates have been based, in so far as regards the United Kingdom, upon the assumption that incomes up to 150*l.* represent about half the total incomes of the English people, and moreover it is necessary to add that this total comprises the incomes of corporate bodies, the English fiscal statistics not separately distinguishing these incomes. *Per contra* in the returns relating to Saxony the incomes of corporate bodies have been deducted from the general total, while in Prussia we have not to take into account the incomes of corporate bodies, individuals alone being chargeable with income tax. The incomes derivable from domains, railways, mines, and factories worked by the State do not figure in the total of the Prussian and Saxon incomes.

The interest upon the public debt constitutes a part of the income of the various populations, but in Prussia and Saxony loans have assisted in the execution of productive undertakings, while in England that portion of the debt which has been advanced and expended in reproductive works is insignificant in proportion to its total debt. Again the aggregate incomes as shown for the United Kingdom should be increased by 70 millions sterling, this total being equivalent, it appears, to the amount which the persons charged with tax under Schedule D (trades and professions) fail to return when specifying the amount of their incomes for the purposes of assessment. In Saxony the returns relating to profits derived from dividends and annuities are also it is said considerably understated. All this tends to prove that the estimates supplied in the preceding comparative tables have only an approximate value, and that it is necessary to exercise the very greatest caution in drawing any conclusions from them.

It will be observed from an examination of the above tables that in the United Kingdom the mean income per head of the population amounted to 35*l.* in 1875, and in 1886 to 34*l.* only. This diminution may be accounted for by the agricultural and industrial crisis and the reduction in the rates of interest, while as regards the increase in the mean incomes in Prussia and Saxony, this may be ascribed to the more rigorous application of the income tax. In the latter country the mean income in 1886 appears to have been 19*l.*, and M. Schall, who made an estimate of the wealth of Wurtemburg in 1883, found that in that country the average per head of the population amounted to 17*l.* 16*s.* Twenty years before this date M. Rumelin estimated this same income at 13*l.* 14*s.*

The mean income is higher in the United Kingdom than in Germany, and the difference would be still greater if Ireland did not enter into the comparison. It would be less if it were possible only to take into consideration the mass of the population, or the working portion of the community in these two countries. As a matter of fact the wealth of those forming the higher ranks of the scale of incomes is much greater in the United Kingdom than in Prussia and Saxony, and it is these large fortunes which in the United Kingdom raise the general average wealth per head of the population.

English statistics relating to incomes only take into consideration those which are chargeable with income tax as exceeding 150*l.* In the year 1886 the total of these incomes attained the figure of 630 millions sterling, and it is well known that the profits derivable from trades and professions (Schedule D) are very much underestimated. In Prussia the aggregate incomes exceeding 150*l.* only amounted to 105 millions sterling.

The English revenue department only shows the distribution of incomes subject to income tax in the case of those persons assessed under Schedule D (trades and professions) and Schedule E. In the year 1884 Schedule D comprised 447,768 incomes of 150*l.* and above, amounting altogether to 144 millions sterling, or 23 per cent. of the total income chargeable with tax, and a mean income of 300*l.*

There were 20,534 incomes of from 1,000*l.* to 5,000*l.*, amounting in the aggregate to 37 millions sterling; and 3,167 incomes of more than 5,000*l.*, amounting in the aggregate to 43 millions sterling; and the fact must not be overlooked that these figures only relate to the incomes derivable from trades and professions, representing barely a quarter of the total incomes.

In Prussia there were in 1884 only 9,517 persons liable for income tax assessed for incomes ranging from 1,000*l.* to 5,000*l.*, amounting in the aggregate to 18 millions sterling, and only 695 taxpayers having incomes above 5,000*l.*, making a gross total of 10 millions sterling. It will be seen therefore that large fortunes are much more numerous in England than in Prussia.

In the United Kingdom and Saxony statistics furnish us with information as to the sources from which the taxed incomes are derivable, but the different groups of incomes established in these countries are nevertheless not comparable.

In Prussia the revenue department does not classify the incomes according to their nature. Admitting, however, that the distribution of wealth is about the same in Prussia as in Saxony, the classification of the total incomes of the Prussian population in 1886, namely, 444 millions sterling, may be established as follows:—

Class of Incomes.	Amount.	Proportion.
	Mln. £	Per cnt.
From landed property	79·9	18·0
„ dividends, annuities, &c.	52·4	11·8
„ wages and salaries	172·8	38·9
„ trades and industries	139·0	31·3

This estimate, it should be observed, is but an approximate one, and it is even probable that in Prussia the proportion of incomes derivable from landed property is greater than in Saxony, and that the proportion of incomes derived from trades and industries is on the other hand smaller.

Soetbeer remarks that the observation is frequently made that the actual economic and social conditions are very greatly in favour of the wealthy classes of the community, who are enabled to enrich themselves at the expense of the poorer classes, who in turn become more and more impoverished, and also at the expense of the middle classes. The statistics of incomes may to some extent serve to confirm this opinion. If, however, the question is more closely examined, it will be found that these conclusions are not well founded. Soetbeer agrees with Leroy-Beaulieu, Engel, Goschen, Giffen, Leone Levi, and Atkinson, that the well-being of the masses is increasing.

Leone Levi observed on this point: "We must emphatically state that the labouring classes have benefited to a considerable extent in the national prosperity of the last thirty years; and it has been clearly shown that the extension of trade and industry has not only assisted to develop in the nation a powerful middle class, but has resulted in obtaining for the working population a veritable increase of income." While Giffen, in his inaugural address as President of the Statistical Society, in November, 1883, said: "We find undoubtedly that in longer life, in increased consumption of the chief commodities they use, in better education, in greater freedom from crime and pauperism, and in increased savings, the masses of the people are better, immensely better, than they were fifty years ago. This is quite consistent with the fact, which we all lament, that there is a residuum still unimproved, but apparently a smaller residuum both in proportion to the population and absolutely, than was the case fifty years ago, and with the fact that the improvement, measured even by a low ideal, is far too small. No one can contemplate the condition of the masses of the people without desiring something like a revolution for the better. Still the fact of progress in the last fifty years—progress which is really enormous when a comparison is made with the former state of things—must be recognised."

The total incomes of the Prussian population amounted to 392 millions sterling in 1876, and 444 millions at the end of 1886, an increase of only 13 per cent. In the former year incomes ranging from 1,000*l.* to 5,000*l.* numbered 7,501, and in 1886 10,123, or an increase of 35 per cent.; while the aggregate of these incomes rose from 14 millions to 19 millions, or an augmentation of 33 per cent., but the average income, which was 1,905*l.*, fell to 1,890*l.*

There were 532 incomes above 5,000*l.* in 1876, and 737 in 1886, the increase therefore being in the ratio of 39 per cent. The total of these incomes rose from 5·6 millions to 7·6 millions, an increase of 34 per cent., but the average income of this class fell from 10,635*l.* to 10,285*l.*

In Saxony the total incomes amounted to 49 millions in the year 1880, and to 62 millions in 1886, an increase of 26 per cent. The aggregate amount of the incomes from 480*l.* to 5,000*l.* rose from 5·3 millions to 8·1 millions, an increase of 53 per cent. The total incomes exceeding 5,000*l.* increased from 1·4 millions to 2·5 millions sterling, an increase therefore of 74 per cent.; but the average income of this class fell from 12,000*l.* to 11,000*l.*

If the large fortunes have become less numerous in Prussia and Saxony, there is a corresponding increase of small and average incomes. The following tabular statement will show the progression of incomes up to 1,000*l.* in Prussia from 1876 to 1886:—

Incomes.	1876.	1886.	Increase.	
			Actual.	Per Cent.
	No.	No.	No.	
Up to and inclusive of 26*l.*	3,311,752	4,046,268	734,516	22
From 26*l.* to 100*l*	4,704,757	5,034,786	330,029	7
" 100*l.* " 300*l.*	384,248	433,682	49,434	13
" 300*l.* " 1,000*l.*	58,286	77,779	19,493	33

It will be observed that the increase in the class of incomes from 26*l.* to 100*l.* has been less rapid than that in the other classes. It should however be remembered that the law of the 26th May, 1883, exempted from income tax all incomes below 45*l.*, and consequently the revenue administration scrutinises less severely the declarations of the smaller taxpayers. It is quite possible that many incomes which continue to appear in the latter class should more properly be included in the category of incomes above 26*l.*

In Saxony, where incomes exceeding 15*l.* are taxed, the number of incomes above 25*l.* has greatly increased. A reference to the subjoined statement will show the movement of small incomes in Saxony from 1880 to 1886:—

	1880.	1886.	Difference.	
			Actual.	Per Cent.
	No.	No.	No.	
Incomes up to 25*l.*	579,111	576,683	2,428	− 0·4
„ from 25*l.* to 80*l.*	446,688	575,846	129,158	+ 29·0

In England incomes above 150*l.* only are liable to income tax, and in this country assessments of between 150*l.* and 500*l.* are very much more numerous than formerly. On this point Mr. Goschen, the President of the Royal Statistical Society, in his inaugural address to the Society delivered on the 6th December last, observed: "In incomes between 150*l.* and 500*l.* the increase per cent. between the years 1877 and 1886 was 21·4. In those between 500*l.* and 1,000*l.* there was during the same period no increase at all; the numbers in 1877 were 32,085, and in 1886 32,033, being to all intents and purposes the same. When we come to incomes between 1,000*l.* and 5,000*l.* there is an increase of 2·4, but in those over 5,000*l.* there is a decrease of 2·3. It results from these figures that during ordinary times of depression, during times such as we have recently gone through, and which certainly have not been times of great prosperity, there has yet been a most satisfactory and steady increase in the number of incomes below 1,000*l.*"

The following table will show the actual number of income tax assessments under Schedule D (trades and professions) in the year 1877, compared with the year 1886:—

	1877.	1886.	Per Cent.
			Increase.
Between 150*l.* and 500*l.*	285,754	347,021	21·4
„ 500*l.* „ 1,000*l.*	32,085	32,033	Nil
			Decrease.
„ 1,000*l.* „ 5,000*l.*	19,726	19,250	2·5
Over 5,000*l.*	3,122	3,048	2·3

The *Economist* attributes the diminution in the number of large incomes in this category to the fact that large numbers of private undertakings have been turned into limited companies, which has brought them under the heading of public companies in Schedule D. In its issue of the 10th December last it says: "The rage during recent years has been to convert large private firms into joint stock trading companies. During the nine years ending 1886 there have been thousands of such conversions, and this has involved a modification of the income tax assessments. So long as an undertaking was in the hands of private partners, the income derived from it was included in the assessments of trades and professions; but as soon as it was converted into a company the assessment was transferred to the heading of public companies."

In 1877 the number of companies other than waterworks, ironworks, mines, quarries, and railways assessed to income tax only amounted to 2,695, with an income of 23·7 millions sterling, while in 1886 the number had increased to 5,135, with an income of 34·5 millions.

Reverting to the question of incomes in Prussia, we find that the Prussian Administration presents each year to the Landtag a statement showing on the one hand the number of taxpayers chargeable with *Klassensteuer*, that is a tax on incomes ranging from 45*l.* to 150*l.*, and those subject to *Einkommensteuer*, a tax on incomes exceeding 150*l.*, and on the other hand the amount of the various classes. It is with the assistance of these documents that Soetbeer has been enabled to estimate the Prussian wealth subsequent to the year 1874. The tax is applied to each family. Each head of a family disposing of a family income of 45*l.* at least is borne upon the registers. Persons not living in a family are moreover taxed for their individual incomes. The following statements will show the distribution of the Prussian population as regards the taxation of incomes and classes (*Einkommensteuer* and *Klassensteuer*):—

Incomes exceeding 150l.

	1876.	1881.	1886.
	No.	No.	No.
Number of incomes—			
Families	130,747	147,703	178,098
Individual taxpayers	26,349	20,286	37,510
Persons chargeable with tax	571,975	645,919	731,921
Proportion of persons per 100 families assessed	417	417	408

Incomes from 45l. to 150l.

	1876.	1881.	1886.
	No.	No.	No.
Number of incomes—			
Families	3,809,485	3,863,318	1,141,680
Individual taxpayers	1,188,743	1,183,352	246,113
Persons chargeable with tax	17,890,953	18,245,001	5,526,007
Proportion of persons per 100 families assessed	438	442	450

Exemptions from Income Tax.

	1876.	1881.	1886.
	No.	No.	No.
Families	1,133,946	1,372,899	4,214,229
Individual taxpayers	2,177,806	2,558,332	3,793,745
Persons exempted from taxation	6,369,856	7,825,781	21,692,362

The number of cases of exemption has been increased by the law of the 26th March, 1883, which exempted from taxation all incomes under 45*l.*

Soetbeer has estimated the incomes of the Prussian population, excluding Hohenzollern, for each year subsequent to 1876, as follows:—

Years.	Population according to Income Tax Register.	Number of Incomes.	Amount of Incomes.		
			Total.	Average.	Per Head.
	No.	No.	£	£	£
1876	24,832,784	8,467,076	392,800,000	46	15
'77	25,346,277	8,648,649	399,600,000	46	15
'78	25,747,660	8,790,285	403,400,000	45	15
'79	26,061,545	8,890,257	404,200,000	45	15
'80	26.368,096	9,001,085	407,500,000	45	15
'81	26,716,701	9,155.885	411,400,000	44	15
'82	26,820,012	9,205,205	415,000,000	45	15
'83	27,016,380	9,268.330	419,100,000	45	15
'84	27,224,179	9,357,489	427,100,000	45	15
'85	27,464,783	9,434,864	435,200,000	46	15
'86	27,805,402	9,603,375	444,200,000	46	16

From 1876 to 1886 the population has increased at the rate of 12 per cent., the presumed incomes have increased 13 per cent., and the proportion of incomes taxable, to the population, has been maintained at the rate of 34 per cent.

To arrive at a total estimate of the wealth of Prussia, Soetbeer divides into six groups the classes of the official tariff as follows: A, incomes under 21*l.*; B, incomes between 21*l.* and 82*l.*; C, between 82*l.* and 240*l.*; D, between 240*l.* and 840*l.*; E, 840*l.* and 4,200*l.*; and F, incomes above 4,200*l.* He increases by about 25 per cent. the incomes comprised in the groups A to E, which he thus raises from 26*l.* to 5,000*l.*, and he adds, on an average, 10 per cent. to the incomes under group F.

It is universally admitted that the scheduled amounts only represent a part of the actual incomes. It is therefore necessary to add to these amounts when one desires to arrive at the actual total incomes. Many persons have suggested a different rate of increase to that adopted by Soetbeer. In the absence however of positive data, Soetbeer relies upon the preceding calculations, based upon information obtained in various places from commissions of values, and it on these bases that he has established the following estimates:—

Incomes in 1876.

Groups of Incomes.	Number.				Amount.			
	Of Incomes.	Per Cent.	Of Persons.	Per Cent.	Total.	Per Cent.	Average Income.	Per Head.
					Mln. £		£	£
A	1,139,946	—	4,192,050	—	—	—	—	—
	2,177,806	—	2,177,806	—	—	—	—	—
	3,311,752	39·11	6,369,856	25·65	66·2	16·86	20	10
B	4,704,757	55·57	16,840,444	67·82	217·7	55·42	46	12
C	384,248	4·53	1,381,044	5·56	60·9	15·52	158	41
D	58,286	0·69	212,200	0·85	27·9	7·12	480	131
E	7,500	0·10	27,300	0·12	14·5	3·64	1,901	523
F	532		1,940		5·1	1·44	10,634	2,916
Total	8,467,076	100·00	24,832,784	100·00	392·3	100·00	46	16

Incomes in 1881.

Groups of Incomes	Number.				Amount.			
	Of Incomes.	Per Cent.	Of Persons.	Per Cent.	Total.	Per Cent.	Average Income.	Per Head.
					Mln. £		£	£
A	1,372,899	—	5,267,449	—	—	—	—	—
	2,558,332	—	2,558,332	—	—	—	—	—
	3,931,231	39·11	7,825,781	29·29	79·1	19·22	20	10
B	4,751,744	51·89	17,178,786	64·30	216·0	52·51	45	12
C	397,190	4·34	1,437,347	5·38	63·2	15·35	158	43
D	66,935	0·73	242,906	0·91	32·0	7·79	478	132
E	8,242	0·10	29,910	0·12	15·5	3·78	1,888	520
F	543		1,971		5·5	1·35	10,204	2,811
Total	9,155,885	100·00	26,716,701	100·00	411·3	100·00	45	15

Incomes in 1886.

Groups of Incomes.	Number.				Amount.			
	Of Incomes.	Per Cent.	Of Persons.	Per Cent.	Total.	Per Cent.	Average Income.	Per Head.
					Mln. £		£	£
A	4,046,268	42·13	8,339,887	29·99	80·9	18·22	20	9
B	5,034,786	52·43	17,513,297	62·98	229·0	51·56	45	13
C	433,682	4·52	1,639,722	5·90	70·1	15·78	161	42
D	77,779	0·81	274,209	0·99	37·4	8·32	480	136
E	10,123	0·11	35,689	0·14	19·1	4·31	1,892	536
F	737		2,598		7·5	1·71	10,281	2,918
Total	9,603,375	100·00	27,805,402	100·00	444·0	100·00	46	16

The total amount of the incomes exceeding 1,000*l.*, groups E and F, represented 4·9 per cent. of the total incomes in 1876, and 6 per cent. in 1886. In 1876 there were 24 incomes amounting to more than 24,000*l.* each, and in the aggregate to 1,313,000*l.* In 1886 there were 33 of these incomes, amounting altogether to 2,654,000*l.*

It would be interesting at this point to present the following statement showing the movement of the Prussian savings banks in each year from 1876 to 1885:—

	Number of Accounts Open.	Deposits.	Withdrawals.	Balance Due to Depositors at the end of the Year.
	No.	Mln £	Mln. £	Mln. £
1876	2,371,632	19·7	14·5	61·0
'77	2,512,019	19·5	15·9	65·3
'78	2,661,382	19·4	16·4	69·1
'79	2,760,302	21·0	16·4	73·8
'80	2,936,055	23·6	17·8	79·6
'81	3,091,584	24·8	19·1	85·3
'82	3,431,610	26·0	19·8	90·8
'83	3,624,658	28·2	20·8	97·9
'84	3,935,848	29·8	22·3	105·4
'85	4,209,453	31·7	24·3	113·0

The excess of the amounts deposited over the amounts withdrawn averaged annually about 4 millions sterling from 1876 to 1880, and 6 millions from 1881 to 1884. The increase of the capital assured in the event of decease seems equally to point to the progress of the general wellbeing.

The following statement shows what has been, according to returns prepared by M. H. Bræmer and M. Conrad, the movement of life assurances during the last twenty years:—

Years.	Bræmer's Returns.		Conrad's Returns.	
	Number of Assurances.	Amount for which Assured.	Number of Assurances.	Amount for which Assured.
	No.	£	No.	£
End of 1867	188,009	26,044,896	267,721	38,264,463
„ '76	364,025	51,110,775	544,275	87,899,304
„ '80	406,273	61,296,111	608,648	106,635,179
„ '85	—	—	727,321	140,810,496
„ '86	—	—	755,532	148,677,547

The majority of the persons assured may be said to belong to the middle classes of society.

Coming next to the question of incomes in Saxony, we find that taxes are levied in that country on all incomes from 15*l.* upward, while, unlike the system employed in Prussia, the tax is not applied to families. For example, the wife and children who earn wages pay income tax directly upon such wages. The statistical returns which are prepared relating to income tax returns show on the one hand the incomes belonging to individuals, and on the other hand those belonging to corporate bodies (communes, joint stock companies, &c.).

The following statement shows the rate of progression of these incomes from 1879 to the year 1886:—

Years.	Individuals.		Corporate Bodies.		Total Amount of Incomes.
	Number of Persons.	Amount of Incomes.	Number.	Amount of Incomes.	
		Mln. £		Mln. £	Mln. £
1879	1,084,751	46·4	3,251	1·5	47·9
'80	1,115,918	47·5	3,628	1·6	49·1
'82	1,158,945	51·2	3,748	1·7	52·9
'84	1,209,034	55·0	4,154	1·9	56·9
'86	1,263,184	59·7	4,682	2·1	61·8

The number of individuals chargeable with income tax increased by 16 per cent., and the amount of their incomes by 28 per cent.

The population was 3,182,000 in 1885. In 1886 the tax applied to 1,263,184 individuals, that is to say, more than a third of the total population, the actual proportion being 37·4 per cent.

In 1879 the net incomes amounted to 43*l.* per taxpayer and 17*l.* per head of the population. In 1886 the average incomes exceeded 47*l.* per taxpayer and 18*l.* per inhabitant.

A reference to the following statement will show the distribution of incomes, grouped according to amounts:—

Year 1880.

Categories of Incomes.	Taxpayers.		Incomes.	
	Number.	Per Cent.	Amount.	Per Cent.
			Mln. £	
Up to 25*l.*	579,111	51·73	10·9	22·15
Between 25*l.* and 40*l.*	279,511	24·97	8·8	18·03
" 40*l.* " 80*l.*	167,177	14·92	9·2	18·77
" 80*l.* " 165*l.*	63,368	5·65	7·0	14·41
" 165*l.* " 240*l.*	13,795	1·23	2·7	5·54
" 240*l.* " 480*l.*	11,081	1·00	3·5	7·31
" 480*l.* " 5,000*l.*	5,384	0·49	5·3	10·84
Above 5,000*l.*	119	0·01	1·4	2·95
Total	1,119,546	100·00	48·8	100·00

Year 1886.

Categories of Incomes.	Taxpayers.		Incomes.	
	Number.	Per Cent.	Amount.	Per Cent.
			Mln. £	
Up to 25*l.*	576,883	45·48	11·1	18·08
Between 25*l.* and 40*l.*	354,589	27·97	11·4	18·51
" 40*l.* " 80*l.*	221,257	17·45	12·1	19·61
" 80*l.* " 165*l.*	76,210	6·01	8·5	13·75
" 165*l.* " 240*l.*	16,743	1·32	3·3	5·35
" 240*l.* " 480*l.*	14,273	1·13	4·6	7·52
" 480*l.* " 5,000*l.*	7,289	0·63	8·1	13·13
Above 5,000*l.*	222	0·01	2·5	4·05
Total	1,267,886	100·00	61·6	100·00

The following table, which is extracted from the *Zeitschrift* published at Dresden by M. V. Bœhmert, parts 1 and 2, 1887, shows the distribution of the various incomes and of the tax in the year 1886:—

Groups of Incomes.	Persons Charged.		Profits Charged.		Tax.	
	Number.	Per Cent.	Amount.	Per Cent.	Amount.	Per Cent.
			£		£	
Up to 55*l.*	1,064,610	83·97	28,916,342	46·77	114,901	14·02
Between 55*l.* and 110*l.*	130,569	10·29	9,844,084	15·92	114,137	13·93
" 110*l.* " 420*l.*	62,927	4·97	11,706,068	18·93	263,636	32·18
" 420*l.* " 1,300*l.*	7,930	0·63	5,320,700	8·61	150,072	18·32
" 1,300*l.* " 2,700*l.*	1,244	0·10	2,232,608	3·61	64,414	7·86
" 2,700*l.* " 5,000*l.*	364	0·03	1,302,218	2·11	37,759	4·61
" 5,000*l.* " 7,500*l.*	107	0·01	644,773	1·04	1[illegible],937	2·31
" 7,500*l.* " 10,000*l.*	46		397,194	0·64	11,737	1·44
" 10,000*l.* " 12,500*l.*	24		268,038	0·43	7,955	0·97
" 12,500*l.* " 15,000*l.*	19		265,171	0·43	7,882	0·96
" 15,000*l.* " 17,500*l.*	5		78,298	0·12	2,325	0·29
" 17,500*l.* " 20,000*l.*	6		110,484	0·18	3,292	0·40
" 20,000*l.* " 22,500*l.*	1		20,059	0·03	600	0·07
" 22,500*l.* " 25,000*l.*	2		47,460	0·08	1,417	0·17
" 25,000*l.* " 27,500*l.*	—		—	—	—	—
" 27,500*l.* " 30,000*l.*	4		116,662	0·19	3,472	0·40
" 30,000*l.* " 32,500*l.*	1		32,113	0·05	960	0·12
" 32,500*l.* " 35,000*l.*	1		34,164	0·06	1,020	0·12
" 35,000*l.* " 37,500*l.*	—		—	—	—	—
" 37,500*l.* " 40,000*l.*	—		—	—	—	—
" 40,000*l.* " 42,500*l.*	—		—	—	—	—
" 42,500*l.* " 45,000*l.*	—		—	—	—	—
" 45,000*l.* " 47,500*l.*	—		—	—	—	—
" 47,500*l.* " 50,000*l.*	—		—	—	—	—
Above 50,000*l.*	6		494,591	0·80	14,820	1·81
Total	1,267,866	100·00	61,831,022	100·00	819,336	100·00

While a reference to the subjoined statement will show the rate of progression of incomes exceeding 5,000*l.* in the case of individuals since the year 1880:—

Years.	Individuals.	Total Amount of Incomes exceeding 5,000*l.*	Average Income.
	No.	£	£
1880	67	579,549	8,650
'82	96	829,782	8,650
'84	111	960,219	8,650
'86	132	1,163,300	8,800

In the year 1880 the total of these large incomes comprised 135,000*l.* of income derivable from landed property, and 275,000*l.* from the funds. In 1884 170,000*l.* of income was derived from landed property, 380,000*l.* from the funds, 15,300*l.* from wages and salaries, and 435,000*l.* from profits drawn from trades and professions.

The following table will show the distribution in 1879 as compared with 1886 of the incomes classed according to their source:—

	Amount of Incomes.		Proportion.	
	1879.	1886.	1879.	1886.
	Mln. £	Mln. £	Per cnt.	Per cnt.
Landed property	10·9	12·0	20·9	18·0
Dividends, annuities, &c.	5·5	7·8	10·7	11·8
Wages and salaries	18·2	26·0	34·9	38·9
Trades and industries	17·5	20·9	33·5	31·3
Total	52·1	66·7	100·0	100·0
Deducting debts	4·3	5·0	—	—
Net incomes	47·8	61·7	—	—

We now proceed to devote some attention to the question of savings banks and life assurance in Saxony. As regards the former, in the year 1878 there were 168 banks, holding a sum of 15,289,667*l.* to the credit of 821,444 depositors. In 1885 the amount due to 1,274,542 depositors in 197 savings banks was 21,702,700*l.* The superannuation fund received 5,055*l.* in 1878, and 136,457*l.* in 1886. The amount for which insurances against fire were effected was 130 millions in 1878 and 159 millions in 1885. Another indication of the diffusion of wellbeing in Saxony is the increase in the consumption of meat. In 1878 the amount consumed per head was 21·2 lbs. of beef and 37 lbs. of pork, while in 1886 these proportions had increased to 25·4 and 42·2 lbs. respectively.

Coming next to the question of the United Kingdom, we find that the population of this country amounted in 1876 to 33,200,000, and in 1886 to 36,700,000, an increase of 10 per cent. The following statement will show the official estimate of the annual value of property and profits assessed to the income tax under each schedule in each year ended 5th April, 1877, to 1886:—

Years	Under Schedule A. For all Lands, Tenements, Tithes not commuted, Manors, Fines, &c.	Under Schedule B. In respect of the Occupation of Land, Tenements, and Hereditaments.	Under Schedule C. For all Profits arising from Annuities, Dividends, &c., Payable out of the Public Revenue.	Under Schedule D. For all Gains arising from any Profession or Trade.	Under Schedule E. For all Public Offices and Pensions Paid out of Public Revenue, and Salaries of Employés and Corporate Bodies.	Total Annual Value of Property and Profits Assessed.	
						Amount.	Per Head of the Population.
	£	£	£	£	£	£	£
1877	174,173,113	69,237,966	39,968,177	256,908,743	30,043,390	570,331,389	17·2
'78	177,139,578	69,172,300	39,908,025	260,626,971	31,494,320	578,341,194	17·3
'79	180,037,896	69,140,132	39,510,310	257,370,699	31,987,260	578,046,297	17·1
'80	185,377,770	69,383,066	39,860,483	249,489,398	32,786,184	576,896,901	16·9
'81	187,598,346	69,187,057	39,846,473	255,355,909	33,236,105	585,223,890	17·0
'82	190,531,679	68,799,405	39,992,771	267,402,184	34,724,938	601,450,977	17·2
'83	191,503,981	65,823,054	40,206,304	279,174,137	36,128,582	612,836,058	17·4
'84	193,344,924	65,514,180	40,580,574	291,336,955	37,733,566	628,510,199	17·6
'85	194,375,167	65,288,206	41,013,640	292,524,871	38,320,248	631,467,132	17·4
'86	195,600,155	63,316,106	42,088,711	289,423,738	39,426,912	629,855,622	17·2

The following statement shows the gross amount of the annual value of property and profits assessed to the income tax upon various classes of property in each of the years ended 5th April, 1877, 1881, and 1886:—

Classes.	1877.	1881.	1886.
	Mln. £	Mln. £	Mln. £
Land	69·4	69·2	63·2
Houses	103·8	117·4	131·4
Farms	69·2	69·1	63·3
Mines	14·6	6·6	7·5
Ironworks	2·7	2·1	1·7
Railways	29·4	31·7	37·0
Gasworks and canals	5·3	7·1	8·1
Funds and annuities	39·9	39·8	42·0
Salaries and pensions	30·0	34·7	39·4
Trades and professions	164·2	164·4	175·6

The incomes comprised in the category of "trades and professions" in Schedule D, and those in Schedule E, are the only ones which the English statistical returns classify according to amount. The subjoined table shows the number of persons and net amount of profits charged to income tax in each of the years 1877, 1880, and 1884, under Schedule D (trades and professions):—

Classification of Incomes.	1877.		1880.		1884.	
	Number of Persons Charged.	Amount of Profits Charged.	Number of Persons Charged.	Amount of Profits Charged.	Number of Persons Charged.	Amount of Profits Charged.
	No.	£	No.	£	No.	£
Under 150*l.*	60,450	2,174,783	49,110	1,682,218	48,368	1,640,499
Between 150*l.* and 300*l.*	226,031	19,717,846	252,426	19,995,807	274,362	21,248,777
" 300*l.* " 1,000*l.*	91,808	38,639,470	95,775	38,690,012	101,337	40,556,697
" 1,000*l.* " 5,000*l.*	19,726	35,715,878	18,177	32,716,608	20,534	37,665,013
Above 5,000*l.*	3,122	40,111,343	2,691	34,875,266	8,167	42,837,023

While the following statement shows similar data relating to Schedule E (wages and salaries):—

Classification of Incomes.	1877.		1880.		1884.	
	Number of Persons Charged.	Amount of Profits Charged.	Number of Persons Charged.	Amount of Profits Charged.	Number of Persons Charged.	Amount of Profits Charged.
	No.	£	No.	£	No.	£
From 150*l.* to 400*l.*	137,103	12,306,656	148,531	12,376,081	160,840	13,279,270
Above 400*l.*	18,128	13,061,958	20,078	13,814,879	23,282	16,231,053

The number of persons who in the year 1877 had a salary exceeding 1,000*l.* was 3,053, and the total amount of these large salaries attained the figure of 5,011,000*l.*, that is to say, an average of 1,640*l.* As the statistical data are not available, it is impossible to follow the movements of these incomes. In conclusion we reproduce the following statement, showing the movement of the savings banks in the United Kingdom in the years 1876 and 1886:—

	Amounts Due to Depositors.	
	1876.	1886.
	£	£
Post Office savings banks	30,411,563	50,874,337
Other savings banks	43,283,458	46,843,995
Total	73,695,021	97,718,332

Soetbeer is of opinion that if it were possible to arrive at the amount of the incomes below 150*l.*, and to compare the mean income of the mass of the English people with that of the mass of the Prussian people, the difference would be found to be very much less than is the case when only the well-to-do and wealthy classes, much more numerous in England than in Prussia, are taken into consideration.

III.—*Agriculture and Prices in the Seventeenth Century.*

The following, which is taken from *The Economist Monthly Trade Supplement* of 10th March, 1888, refers to two volumes, among others, that have recently been added to the Library by purchase:—

"Through the Clarendon Press, Oxford, Mr. J. E. Thorold Rogers has issued two more volumes of the 'History of Agriculture and Prices in England, from the year after the Oxford

Parliament (1259), to the commencement of the Continental War (1793).' The first two volumes of this laborious work were published in 1866, the next two in 1882, and, in addition to the two now before us, for the period of 1583-1702, there are two yet to follow to complete the set. By searching through the records of college estates and other contemporaneous documents, Mr. Rogers has been able to collect a mass of information, and whole volumes of figures, throwing a great deal of light upon the condition of agriculture, the positions of all classes of the people, and the movements in prices during the long period embraced by his history. With respect to a few portions of the time, there are gaps in the lists of prices; but for the most part the author has been able to present a yearly record of the value of a great number of commodities. Indeed, he gives prices at several markets for various periods of recent years, and these he has tabulated, giving yearly and decennial averages, which add greatly to the value of the records. The labour must have been immense, not only because many a tiresome search has been necessary in order to fill up gaps in records most relied on for information, but also because of the varieties of weights and measures used in the different parts of the country at various periods, all of which had to be brought to uniform standards. The work done, moreover, has been of a kind for which no immediate reward could be hoped, seeing that the ordinary reader is repelled by the great mass of detailed information placed before him. But, although the work is eminently one for the student rather than for the casual reader, all who take an interest in the history of their country will find in the statements and conclusions derived by the author from his investigations, a great deal which throws light upon points previously obscure or doubtful. That many will also find much to disagree with in the author's conclusions goes without saying to persons acquainted with his decided views upon questions of agricultural and social economy; but they may be grateful for the facts placed in such abundance before them, while preferring to make their own deductions.

"The period with which Mr. Rogers deals in the two volumes before us begins with the middle of Elizabeth's reign, and ends with the commencement of Anne's. There is, as he observes, no other part of English history on which so much has been written, and yet with the facts dealt with in these volumes no modern writer has been much concerned; there were too many stirring events to be chronicled for the historian to have patience for the investigation of economic details. The first and most obvious economic feature of the period, the author considers, was the effect which the influx of the precious metals from the New World had upon prices. While this influx was in progress there was an enormous rise in prices, and consequently in the rent of land. The operation appears to have been completed by about the middle of the seventeenth century, after which there was great steadiness in values for the rest of the period under review. From evidence which Mr. Rogers sets before his readers, he concludes that, early in the century, 'the rent of arable land had generally increased ninefold over the old rent, and in many cases even twelvefold over customary rent at an early period.' This is an astonishing statement, but will appear less so when a comparison of prices at various periods is carefully made. From his voluminous tables Mr. Rogers has compiled a convenient abstract, showing the average prices of leading articles of food during these periods, as follows:—

	1541-82.		1583-1642.		1643-1702.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Wheat .... per qr.	13	10½	36	1	41	11¼
Barley .... „	8	5¾	19	9¾	22	2¼
Malt .... „	10	5	21	5	23	9¾
Oats .... „	5	5½	12	5	15	2½
Oatmeal	20	10¾	37	9¼	52	11
Beef .... per 14 lbs.	1	7	2	5½	3	5½
Sheep .... each	6	4	13	10	24	8
Capons .... „	1	1¾	1	10¼	2	6
Geese............ „	–	10	1	11½	3	–
Butter .... per 12 lbs.	2	8	4	9½	6	1
Cheese .... „	1	5	3	2¼	3	7¼
Fish .... cwt.	55	4	65	9¼	85	5¼
Salt .... per qr.	10	10¾	14	6	22	4¾

"In all but the last two items, not agricultural, it will be seen that the percentage of rise was much greater in the second than in the third period. On most other articles, the prices of which are given for the three periods, the percentage of increase is nearly as great in the third period as in the second, and in a few it is greater. The great rise in the prices of the cereals, together with a rapid increase in population and the progress of manufactures, sufficiently account for a considerable advance in rents, while one of these causes, in part at least, explains the comparatively small rise in the prices of manufactured goods. The growth of rents, moreover, was all the greater on account of the slowness in the advance of wages, which, again, in part accounts for the comparatively slight increase in the prices of manufactured goods. In the rural districts, Mr. Rogers says, agricultural labourers were almost invariably paid only 8*d.* per day from 1583 to 1642, masons' and bricklayers' labourers the same, and artisans 1*s.* per day; and after that time, for a century, the corresponding rates of payment were 1*s.* and 1*s.* 6*d.* But London wages, which were much higher, the occasional scarcity of workmen, and the difficulty or unpleasantness of some kinds of work, raised the averages for the country as a whole, as may be seen from the following table, in which the higher rates are allowed probably more than their proportionate effect. The rates are per week:—

	1541-82.		1583-1642.		1643-1702.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Carpenter	5	–	6	2¾	10	2¾
Mason	4	9	6	5¾	9	10¾
Sawyers (pair)	8	9	12	1½	19	–¼
Tiler or slater	4	10½	6	3¾	9	8¾
„ and man	7	7½	10	6½	15	–¾
Plumber	4	9	7	10¼	14	–¼
Bricklayer	5	2½	6	4½	12	2½
Joiner	5	3	7	3¾	12	7¾
Mason's labourer	3	4½	4	2¾	6	7½
Farm „	3	3	4	10	6	4½
Female „	2	2¼	2	3	2	6¼

"Between 1583 and 1702, our author says, wheat rose 209 per cent., while labour advanced only 106 per cent., and the latter average rise includes that of the wages of artisans affected by London prices. If wages in the rural districts were as completely stationary for long periods as is above stated on the authority of Mr. Rogers, the country labourers must have been badly off indeed. In another place the writer gives the percentage rise in different classes of commodities and labour, from the prices in 1541-82, to those of 1583-1702, of which we can copy only the averages, which he has calculated for the several divisions: corn, 166; animal food, 184; light and heat, 89; fish and salt, 79; metals, 65½; materials, 94½; paper, 60; foreign produce, 156; linen, 42; woollen cloth, 46; labour, 106. Prices were advancing during nearly every decade of the first half of the one hundred and twenty years comprising the period under review; but the dearest decade of all was 1643-52, when cereals, hay, salt, and some other necessaries attained their maximum value. This was partly owing to bad harvests; but seeing that prices not affected in the way mentioned also rose, Mr. Rogers attributes the advance chiefly to the cessation of the civil war, or to its effects, most felt after it had ceased.

"Mr. Rogers dwells at some length, and with natural indignation, upon the infamous attempts to regulate by law the rates of wages, which after two centuries of failure, became unhappily successful in the seventeenth century. In his sixth volume he gives several of the assessments of wages made, in connection with the cost of the necessaries of life, by the justices of the peace in pursuance of the Act of 5 Elizabeth, cap. 4. By this infamous measure, passed in 1562, the magistrates were not only empowered to fix the wages of agricultural labourers and artificers, but also to enforce their assessments by fine and imprisonment, and to compel all artisans, to pass through a period of apprenticeship. One of the provisions of this statute was, that all persons between the ages of 15 and 60, 'not otherwise employed or apprenticed, are compellable to serve in husbandry.' Another renders servants who leave a city or parish without a testimonial liable to imprisonment. The assessors were further directed to define the hours of labour; to fine and imprison any man who struck work, and any employer who paid, and man who accepted, more than the fixed rate of wages; to punish with a year's imprisonment any man who assaulted his master; to compel artificers to work in the field in harvest, or to put them in the stocks; and to compel single women to work by the year, week, or day, as considered most desirable. These are only a few of the arbitrary interferences with the liberties of employers and workmen, and, among many others, was one prescribing the proportionate numbers of journeymen and apprentices in various callings, and the classes from which apprentices were to be taken.' These regulations, the author declares, brought the labourer in the seventeenth century to absolute penury, and to reliance on poor-law relief. In one assessment given in the sixth volume, that fixed by the Chester magistrates in 1594, the daily wages of labourers and artisans, with meat and drink, range from 1*d.* to 4*d.*, the most common rate being 2*d.* In 1610, after wages had risen, the Rutland magistrates fixed the wages of a hedger and ditcher at 4*d.* a day with food, or 8*d.* without; while a mower was to have 5*d.* or 10*d.*, and an ordinary labourer (except in harvest) 3*d.* or 7*d.* from Easter to Michaelmas, and 2*d.* or 6*d.* for the rest of the year. By 1661 the rates had again advanced, for in that year the Essex justices fixed the wages of a common labourer at 8*d.* with board, or 1*s.* 2*d.* without, for one-half of the year, and at 6*d.* or 1*s.* in the other. Piecework was assessed as well as day work, and for mowing an acre of grass, the munificent sum of 1*s.* 10*d.* without food, was allowed.

"One of the most valuable tables in the book before us is that in which the annual average prices of wheat and rate of wages for a hundred and twenty years are placed side by side. It is particularly useful for protectionists to study, as it clearly shows that wages by no means invariably rise with the cost of food, but are often lower when the necessaries of life are dear than when they are cheap. In the averages of wages, without food, here given, London entries are excluded, as the justices' assessments did not apply to the metropolis; but the earnings of masons, bricklayers, tylers, carpenters, sawyers, thatchers, and all classes of labourers, are reckoned in. We can give only a few examples from this long list, based, be it remembered, upon voluminous chronicles of prices and wages, which nearly fill the sixth volume:—

Year.	Average Price of Wheat.		Average Weekly Wages.		Year.	Average Price of Wheat.		Average Weekly Wages.	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
1583–84	20	–	5	1½	1645–46	34	9½	7	6
'97–98	52	4½	5	1¾	'48–49	67	10½	7	4½
1601–02	26	7¼	5	2	'55–56	33	2¼	8	1½
'13–14	44	8¼	5	4½	'61–62	70	9¾	8	–¾
'20–21	25	5	5	7½	'97–98	62	5¼	8	8
'22–23	51	1	5	7½	1701–02	26	7	8	8

"We have bracketed these examples in couples, to show that, in spite of the tendency of wages to advance as time went on, it often happened that an enormous rise in the price of wheat had little or no effect upon wages, while, in some of the instances—which might be multiplied many times over—there was a fall in wages as wheat became dearer, or a rise when it became cheaper. Mr. Rogers points out that the average rates of wages which he gives are much higher than the average of the rates fixed by the magistrates for the corresponding years for the same classes of workmen, thus showing that employers were more generous than the officials who administered an iniquitous law.

"We have touched on only a few of the subjects dealt with at more or less length by Mr. Rogers. The book, as we have already remarked, is one for study rather than for hasty reading, on account of the great mass of details which it contains, and for that reason it is impossible to review it comprehensively in the space at our disposal."

IV.—*Notes on Economical and Statistical Works.*

A History of Political Economy. By J. K. Ingram. Edinburgh: A. and C. Black, 1888.

Every student of economics will rejoice to find that Mr. Ingram has republished in this form the article upon "Political Economy" which he contributed to the *Encyclopædia Britannica.* They will rejoice because there undoubtedly is in this country a pressing need for such a book. McCulloch's *Literature of Political Economy,* to which Mr. Ingram alludes in his Prefatory Note, is now, apart entirely from other shortcomings, out of date; and although there is also an English version of Blanqui's well-known history, yet that is open to a similar objection. And so the volume before us goes far to fill a place which has long needed to be filled. It traces the history of economic thought from its rudimentary and scattered germs in ancient times (chapter i) and the middle ages (chapter ii)—under the Oriental theocracies, the Greek and Roman civilisations, and the Catholico-feudal government of mediæval times. It also describes at exhaustive length the various stages in the modern development of the study. In the course of this inquiry Mr. Ingram endeavours, as he himself remarks, "to notice all the really important works on the science;" and, although his main endeavour has been "to exhibit the historical development of economic thought in its relations with general philosophic ideas," yet he has undoubtedly gone far to achieve the other object he mentions, and has made a very successful attempt to "give an exhaustive account of economic literature."

Nor, we imagine, will any sincere economic student—however much he may differ from the general tenour and the particular expression of Mr. Ingram's well-known opinions on the nature and aim of economic study—regret that the book is, for all substantial purposes, an exact reproduction of the article, and that no apparent attempt has been made to change, or even to modify, its character. For the appearance, from time to time, of Mr. Ingram's opinions—and he certainly makes no endeavour to conceal them—does undoubtedly help to give unity to his treatment; and, although it might have gained in judicial impartiality, had he been less persistent and, we are afraid we must add, less dogmatic in enforcing his Comtist theories—for after all Comte appears to us to have been almost as much a dogmatic theorist as many of his opponents, and Mr. Ingram does not always exhibit in his own person that mental attitude of "*pause*" which he says (p. 1) that the circumstances of the present seem to "prescribe"—although his treatment might thus have gained in judicial impartiality, yet on the other hand it would probably have suffered to a material extent in vigour and brilliancy.

Those, then, who read the book—and they will, we hope and believe, be many—must be prepared to find it pervaded with Comtist ideas, and to hear again and again echoes of the famous address delivered from the Chair of the Economic Section of the British Association when it met last in Dublin. But, when once they have taken this fact into account, they will, we believe, read the book with interest and advantage. And Mr. Ingram's own attitude is not always so extreme as some passages might suggest. Thus, although on p. 3 he observes that the "several branches of the science of society are so closely connected that the history of no one of them can with perfect rationality be treated apart," he immediately adds that "such a treatment is recommended—indeed necessitated—by practical utility." And again on p. 91 he admits that the deductive "method is quite legitimate when the premises from which the deduction sets out are known universal facts of human nature and properties of external objects."

The enthusiastic adoption, however, and the reiterated enforcement of Comtist views naturally tend to give strength to some and weakness to other parts of the book. The special, and, we are compelled to add, somewhat pompous and grandiose phraseology of the positive philosophy, with its "hierarchy" of the sciences, its "social medium," its "statical" and "dynamical sociology," and its dogmatic law of progress of knowledge, has, we think, exercised some influence in leading Mr. Ingram on some occasions to clothe simple ideas in unnecessarily difficult language. We cannot approve, for example, of his use on p. 34 of the expression, "the spontaneous nisus of society;" and we think that on p. 40 a simpler form of words might have been found than "sociological prevision;" while the following sentence, which occurs on p. 156, presents all the proverbial difficulty of metaphysics in the expression, if not in the conception, of the thought which it contains: "In the final synthesis," Mr. Ingram remarks, "all the previous analyses have to be used as instrumental, in order to determine how every real quality of things or men may be made to converge to the welfare of Humanity."

But it is not merely in his language that Mr. Ingram seems to us to have suffered from the influence of the Comtist philosophy. The long chapter in which he reviews the history of the system of natural liberty betrays, we think, in some places an unfairness which is the consequence of that influence. His treatment of Adam Smith indeed is, on the whole, judicial and exhaustive, but his discussion of Malthus appears to us to be unduly biassed, and his criticism of Ricardo and of the so-called Epigoni to be manifestly prejudiced. He does not seem to recognise that Malthus might, as he himself remarks in the case of Adam Smith, present ideas which were indeed old, but might present them in such a form that they really ought to be regarded as new. Nor does he appear to apply to the case of Ricardo the doctrine which pervades the book—the doctrine (p. 3) that "every thinker" is "a child of his time and cannot be isolated from the social medium in which he lives and moves." For surely Ricardo moved not merely metaphorically, but to some extent also literally, in a "world of abstractions" (*cf.* p. 123); for the busy restless competition around him might well have suggested an idea that that competition was universally prevalent. The world of actual contemporaneous fact did seem to accord with his "world of abstractions." Nor are we sure that the whole of this section of the book ought not to be revised in the light of an examination of the attitude of the older economists on the question of State-interference such as that made in the August number of the *Contemporary Review* by Mr. John Rae.

But on the other hand Mr. Ingram's opinions and tendencies have undoubtedly strengthened some parts of his work. It is pervaded by a historic sense which enables him to place in their true perspective such theories as that of the mediæval church on usury, and of the mercantilist writers on wealth and commercial policy. Of the latter indeed he says (p. 37), following Roscher, that they "may be best described" "not by any definite economic theorem which they held in common, but by a set of theoretic tendencies, commonly found in combination, though severally prevailing in different degrees in different minds." Again this same historic sense leads him to show how much Adam Smith was indebted to the labours of his precursors, and above all of the Physiocrats. "His appearance," he remarks (p. 87), "at an earlier stage, or without those previous labours, would be inconceivable; but he built, on the foundation which had been laid by others, much of his own that was precious and enduring." Once more Mr. Ingram is led by this historic sense to bring into deserved prominence writers too often neglected, as for instance Richard Jones; and the familiar reproach so frequently raised against us of being insular cannot certainly be directed with fairness against Mr. Ingram, for he devotes a large, but not, we think, unreasonable space to the German historical school, and he calls attention to the excellent work of the modern Italian economists.

The book has then its failings, but it also has many redeeming virtues. The masterly analyses of the salient points in the teaching of the different economists which are noticed are exhaustive and valuable; and we could ill spare, now that we have once obtained it, this history of political economy.

The Principles of Political Economy. By Henry Sidgwick. (2nd edit.) London: Macmillan and Co., 1887.

Professor Sidgwick's *Principles of Political Economy*—the second edition of which we have before us—has now been published a sufficient length of time to render it possible to form some kind of estimate about the place it is likely to occupy in the future history of the science. At the time when the first edition was issued, we remember to have seen a criticism to the effect that it formed the most weighty contribution to economic study which had been made —in this country at least—for a considerable period. This estimate has, we venture to think, been more than justified by subsequent experience, and the mere circumstance that a second edition of the book has been demanded is no unimportant evidence of this. A more intimate acquaintance with its contents has increased the appreciation with which it was generally received; and no economic student can afford to have it absent from the shelves of his library. It is true that it is by no means an easy book; and Professor Sidgwick would, we imagine, be the last person to desire that it was. Many of its pages require a severe mental effort before their full meaning can be grasped, and for this reason alone the *Principles of Political Economy*, like the *Methods of Ethics*, is not a book to be placed in the hands of a beginner. Indeed we might almost question the wisdom of adopting it—as we believe has been done in one university—as a prescribed book for examinational purposes; for we envy the student, if he exists, who could safely assert that he had "got" the book "at his fingers' ends." Nor can it be denied that a tyro in economics might carry away from the perusal of some of its chapters an idea that political economy consisted in a large degree of mere logomachy. The discussions in the First Book on the meanings of the terms *Wealth* and *Capital* are undoubtedly instructive and valuable, and are also in strict accord with Mr. Sidgwick's opinion that the work of hunting after a definition is more important than the attainment of the definition itself; but they might easily create in an untrained mind a disgust with what appeared—erroneously no doubt but still hardly unnaturally—to be sterile and tedious logomachy. We are not sure that Mr. Sidgwick has not devoted too much space to the discussion of the questions affecting the definition of these terms; but we are sure that for this, as well as for the other reason we have mentioned, the book is one for advanced, if not very advanced students; and we should be inclined to employ more emphatic language than Mr. Sidgwick himself uses (p. 7) in the first chapter of his introduction, when he says that the book "is not precisely an elementary treatise."

For advanced students, however, it is of very great value—and this on several accounts. Mr. Sidgwick brings to bear on the treatment of economic subjects a philosophic breadth of view which few economists could command. His book is, if we may say so, the excursion of a philosopher into economics; and while it may exhibit some of the failings, it undoubtedly presents most, if not all, of the virtues of a philosophic mind. And it is the excursion of a philosopher who has taken almost, if not quite, the whole of mental and moral science for his province. Mr. Sidgwick has already given us a book on ethics which, it is no exaggeration to say, has taken the place of a "classic;" he is now publishing a volume on politics, of which the highest expectations have been formed; and he has brought the knowledge he has gained from these kindred, although different, branches of study, to bear upon his investigation of economics. Those interesting chapters in the third book, where he examines into the principles of distributive justice and into economic distribution, exhibit traces on every page of the influence of this wide and varied knowledge, and are perhaps the strongest parts of the book. But it has also affected his general treatment; and we may attribute to it two main consequences which to some extent imply one another. He is exhaustive, and he is judicial. All who engage, however cursorily, in the study of ethics or politics, must be aware that such study involves the examination of questions from every possible side. It involves the tracing of propositions to their ultimate consequences; and therefore, almost of necessity, compels acquaintance with the weak as well as the strong points of an argument, with the one as well as the other side of a question. No one who has carefully read Mr. Sidgwick's book will venture to dispute his claim to thoroughness and impartiality. The chapter in the second book in which he examines the Theory of Exchange Value of Material Commodities might perhaps be mentioned as being, in an especial degree, illustrative of the first of these two qualities; while, for examples of the second, we might refer to the treatment of the wages-fund theory in the eighth chapter of the same book, to the chapter on Method in the Introduction, or lastly to the investigation of the system of natural liberty in the third book. But it is unnecessary to select special instances of characteristics which are common to the whole of the book. Mr. Sidgwick is the despair of partisans, and we could prescribe no more wholesome corrective for one-sided bigotry than the reading and re-reading of his writings. With such thoroughness indeed does he work out a theory to its ultimate consequences, with such judicial fairness does he state all the qualifying circumstances, and with such extreme impartiality sum up the evidence for or against some particular view, that he may sometimes produce an impression that no finality is possible and no judgment reliable. And yet we venture to think that this is a conclusion which is not justified, and might be contradicted by Mr. Sidgwick's own example. We venture to think that much that is of practical use may be gained from his theoretical inquiries, and that his study of theory assists him materially in his examination of the questions more intimately connected with practice of which he treats in the third book.

The second edition of the book does not differ much from the first. But a careful revision has been made; some parts have been shortened and simplified; some of the matter in the text—as for example the section on Ricardo and Mill in the first chapter—has been transferred to the notes, and some additional matter—as for instance on the question of conciliation and arbitration—has been added. The book has been improved, where improvement was needed; but such occasions were few, and those who are acquainted with the first edition will experience little difficulty in making themselves familiar with the second. And they will be many, for Mr. Sidgwick has, we believe, influenced, directly or indirectly, nearly every advanced economic student in England; and even those who are most hostile to the teaching and method of the older economists can hardly fail to be grateful to him for the help they have derived from his careful and exhaustive revision of that teaching. Even Mr. Ingram cannot refrain from respecting and admiring the "conscientious and penetrating criticism which" Mr. Sidgwick "applies to the *à priori* system of economics in its most mature form." He adds indeed that it "is open to question whether the task was wisely undertaken;" that the "time for a new construction has arrived," and that Mr. Sidgwick's treatise may "tend to revive the *steriles contestations* and *oiseuses disputes de mots* which Comte censured in the earlier economists." We need hardly say that we do not agree with this conclusion. We believe that Mr. Sidgwick's work will mark an epoch in the history of the science, but that it will do so in a different sense from that conceived by Mr. Ingram. It does sum up in a "masterly manner" the results of previous research, and we could wish that Mr. Sidgwick had seen his way to add more often than he does the *particular* references to the authors from whom he professedly derives the material for his own observations. But on the other hand the book undoubtedly constitutes also a step in advance; for although Mr. Sidgwick modestly observes that he does not "aim at originality," yet there is much that is original, much that is suggestive and stimulative contained in his pages.

La Morale Économique. Par G. de Molinari. Paris: Guillaumin et Cie., 1888.

The high reputation which M. de Molinari enjoys in this country, and which is based not merely upon his previous publications but also—in an especial degree—on his editorship of the excellent *Journal des Économistes*, would be sufficient to ensure for anything that came from his pen respectful attention. We do not ourselves agree with some of the views propounded in this book; but we cannot fail to recognise and admire the ability and force with which they are presented. The book contains an elaborate argument which is set forth with a clearness that only a Frenchman perhaps could command, and a power of sustained reasoning that is in itself evidence of great economic ability. It abounds with suggestive thought and acute criticism. With many of its particular arguments we agree, but we cannot accept without reservation its pessimistic conclusion—for M. de Molinari certainly takes no sanguine or cheerful view of the immediate, whatever may be his view of the ultimate, future—nor can we endorse the general basis on which much of the argument rests. M. de Molinari appears to us to be influenced to an undue extent by the notions which gather about what are known as the economic harmonies; and to have a belief—almost as thoroughgoing as that of Mr. Herbert Spencer himself—in the advantage of an unimpeded struggle for existence. Although he recognises the extravagance and unreasonableness of extreme individualists, and although he allows that the interests of the individual must be subordinated to those of the nation, and even to those of the nation of nations, the species, yet he certainly appears—if we understand him aright—to entertain an alarm which is excessive in degree, of the authority and action of the State, and to look forward with a corresponding excess of confidence to a time when governmental action will be reduced to a minimum, if it does not disappear altogether. We do not think that he has found in all respects the correct explanation of the present crisis—as he calls it—and we hardly believe that the "new order" of which he speaks will be realised, or that it would on all accounts be desirable if it were.

But, when we have made this criticism, there is still much left to praise in the book. The earnest and forcible protest raised by the author against the alarming increase of public indebtedness, the graphic picture which he draws of the internationalisation of capital and labour and means of communication, the cogency with which he points out the ultimate evils occasioned by the protectionist system, the moral fervour with which he examines the spectacle presented by continental Europe of an armed camp, and the insistance with which he dwells on the economic loss too often occasioned by sudden economic change, are all valuable and interesting characteristics of his work. For, although M. de Molinari adheres without swerving to a belief in the ultimate and fundamental harmony of economics and morals, and although he maintains that economics is, if we may say so, the science of which morality is the art, yet he acknowledges that economic change may sometimes result in temporary loss, and that therefore there may be a temporary discord between economics and morality, and he certainly contends for an approximation of economics to morals rather than of morals to economics.

His treatise is divided into an introduction, explaining the general character and scope of the work, and seven books. In the first of these he examines the relation of morals to political economy. He defines the object of the former as being the general and permanent interest of the human species; he investigates the economic phenomena of production, distribution, and consumption; and he argues that these necessitate the rules of conduct which form the matter of morality. They are regulated by "natural" laws, which man cannot constitute but can only disobey or observe; and these laws are in the first place that of "l'économie des forces," in the second that of "la concurrence," under its three successive forms—animal, political, and industrial—corresponding to three successive stages in the history of society—the one illustrated by the chase, the second by war, the third by division of labour and exchange—and in the third and last place, "la loi de progression des valeurs." Throughout this chapter M. de Molinari follows the orthodox economics; and he argues that this production, distribution, and consumption can only be carried out if man is free, and does not violate the freedom of others. This again implies rights and corresponding duties which form the matter of morality. To exercise the rights and to fulfil the duties, knowledge, intellectual and moral, is needed; and this man does not always possess. Hence the necessity of government, which should be very powerful in the early stages of society, and should decline in authority as man progresses towards that self-government which is the ultimate goal.

Government acts in its turn by means of codes, such as civil law, religious authority, and public opinion—reinforced by the conscience of the individual man. In the second book M. de Molinari examines into the details of rights, and in the third into those of duties; and thus the way is paved for the investigation in the fourth book of the proper sphere and function of government, and in the fifth of the history of moral progress, from its origin in primitive custom down to its position at the present time in the era of "la grande industrie." In the sixth book we have an account of the nature and causes of the present crisis, as it is styled. This is due, to put it briefly, in the first place to the overthrow of the ancient *régime* before men were fully ready for self-government, and in the second to the maintenance of political servitude—the undue extension that is of the area of governmental control, and of the prerogative of governmental authority, at a time when that has ceased to be necessary and has on the contrary become positively mischievous. And so progress in material wealth has been accompanied almost *pari passu* by loss resulting from deficient morality; and luxury, debt, and war have remained and increased. At the present time the crisis is still in its ascending period; but it will reach a climax, and then the new order will be established—the economic state, with that internationalisation of capital and labour which is even now going on completed, that abolition of war for which public opinion is gradually paving the way accomplished, and that full capacity for self-government to which man is advancing substituted for the anachronistic governmental authority of the present period. Such are the salient features of the new order which M. de Molinari describes in his seventh and last book.

A History and Criticism of the Various Theories of Wages. By W. McDonnell. Dublin: William McGee, 1888.

In selecting for the subject of the Whately Memorial Prize Essay for 1887 the question which forms the title of this little book, the Board of Trinity College, Dublin, made, we venture to think, a wise decision. For although at first sight a history of theories of wages might seem likely to discredit the usefulness of economic study, yet this is a superficial view which disappears before a more penetrating criticism. For while it is true that for a considerable time a theory of wages retained a predominance to which later research has, we think, conclusively shown that it is not entitled, and while the overthrow of that theory left behind a confusion from which perhaps we have not entirely emerged, yet there can on the other hand be no doubt that the degree and the direction of the progress recently made in economic research can be perhaps more strikingly illustrated and more unmistakably proved in connection with the question of wages than almost any other economic point. Mr. McDonnell's prize essay furnishes therefore an interesting example at once of the tendency of modern economic reasearch and of the usefulness of economic study. He has presented in turn the various theories of wages propounded by leading economic writers; and he has indicated the points wher in his opinion, they failed. He has shown how, differing as they did from one another on important matters, they yet, almost without an exception, recognised that connection between real wages and efficient work (sec. 14), to which recent economic opinion has given a conspicuous place. He has pointed out how changes in the theories followed upon changes in the respective prominence of different classes of facts and alterations in the general tendency of opinion and feeling. He adopts himself the theory propounded by President Walker, with a reservation to which perhaps he attaches undue importance; and there are many signs throughout the essay of the influence of Mr. Walker's treatment of the subject. But Mr. McDonnell has, we think, conscientiously endeavoured to set forth each one of the various theories with fairness, and to indicate with impartiality their strong and their weak points. With many, if not most, of his criticisms, we agree; although we must indeed add that, as we might expect in a prize essay, they are for the most part not very original, and that in some few cases he affords an example of the crudeness and inconsistency which are so liable to attach to the period when the formation of new opinion is taking the place of old and exploded ideas.

Scienza delle Finanze. Di Giuseppe Ricca Salerno. Firenze: G. Barbère, 1888.

This little manual by Professor Salerno of Modena is the third of a series which is now being published at Florence. The subject with which the series deals is juridical, social, and political science; and the object of the publication is to supply students and practical men with a handy means of acquiring and refreshing their knowledge of scientific truth. Thus the present volume contains within the comparatively narrow compass of 263 pages a compact account of the subject of which it treats. Professor Salerno has endeavoured, as he states in the preface, to collect and re-arrange the more important results of scientific research into the question of public finance. He acknowledges his indebtedness to the leading authorities on the subject, such as Stein, Wagner, Schonberg, and Leroy-Beaulieu; and to so recent a date has he brought down his investigations that amongst these authorities we find the valuable treatise of Professor H. Adams on Public Debts. For the general theory of economics and of finance he refers to Jevons, to Menzer, and to Bohm-Bäwerk. The book is of course of an elementary character; but the author has not on that account neglected to afford a stimulus to wider study. In the first part he treats of the general theory of the subject, examining in separate chapters into the facts and chief doctrines of finance, and into the relation of public finance to the production, distribution, and exchange of wealth. In the second part he considers the special institutions and arrangement of public finance under three heads—public expenses, ordinary, and extraordinary revenue; and under the last of these three heads he discusses those questions connected with the consolidation and conversion of public debts which have recently been brought into prominence in this country by the gratifying success which has attended the Chancellor of the Exchequer's conversion scheme.

Précis d'Économie Politique. Par Paul Leroy-Beaulieu. Paris: Guillaumin et Cie., 1888.

Among the many elementary treatises on economics which have recently appeared, M. Leroy-Beaulieu's manual will, we think, be found to occupy a high position; and we are glad that the hesitation with which he tells us he at first regarded the project of writing the book was eventually overcome. That hesitation arose, as he states in the preface, from the fact that he was engaged in the preparation of a much more extensive work; and we may be sure that this will, in common with all that proceeds from M. Leroy-Beaulieu's pen, be weighty and interesting and original. But, although the appearance of this book may have been delayed by the publication of the volume before us, we venture to think that he has done his utmost to compensate us for the delay. The manual is of course elementary, and an express endeavour has been made to avoid subtilties and idle controversy, and to escape the errors alike of vague metaphysics and of mathematical intricacy. But although M. Leroy-Beaulieu has, we think, succeeded in this endeavour, and although he has abundantly fulfilled his desire to be "true and clear," yet he has not failed to give us more than we find in most elementary treatises. He has, it is true, presented in an interesting form the main outlines of the accepted teaching of the so-called orthodox economics; but he is—as all readers of his other writings know—by no means a blind and submissive adherent of the orthodox school. Indeed we think that on one or two points he betrays exaggeration in dealing with the teaching of the older economists, and that his criticisms of Malthus and Ricardo are valuable rather as making explicit the conditions under which their theories must be applied to the facts of the modern world, than as overthrowing the central truths on which those theories rest. There can be no doubt, however, that his criticisms are in most cases full of interest and importance, and that he is thoroughly alive to the facts of the modern world and to the changes effected in modern economics. This is especially marked—as was only to be expected—in the second section of the book which deals with the distribution of wealth; and this section might not inaccurately be described as a summary of the views contained in the well-known and valuable essays on *La répartition des richesses*, and on *Le collectivisme*. But the same feature is apparent throughout the book. The elastic interpretation which he gives to the term "nature" as an agent in production; the importance which he attaches to the distinctive function and remuneration of the *entrepreneur;* the attention which he devotes to the growth and influence of association in modern industry, and the discriminating verdict which he passes upon luxury as an economic factor, might be quoted amongst other illustrations of this. And in the instance we have last mentioned we may find an illustration of another feature which is very apparent throughout the volume. M. Leroy-Beaulieu is careful to state both sides to a question; and in the case of luxury, as in others, he performs this work with an unmistakable desire to be perfectly fair and impartial. The book indeed appears to us to be one of the best elementary treatises that we have seen; and we hope that it may not be long before it finds an English translator.

V.—*Additions to the Library.*

Additions to the Library during the Quarter ended 30th September, 1888, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India, Colonial and other Possessions;* (c) *United Kingdom and its several Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

Donations.	By whom Presented.
(a) Foreign Countries.	
Argentine Republic—	
Annuaire Statistique de la Province de Buenos Ayres. 2ᵉ année, 1882, et 4ᵉ année, 1884. 2 vols. Plans	H. Ling Roth, Esq.
Annuaire Statistique de la Province de Buenos Ayres. 6ᵉ année, 1886	The Bureau of General Statistics
Message du Gouverneur de la Province de Santa Fé aux Chambres Legislatives à l'ouverture de leurs Sessions ordinaires de 1888. 8vo.	
Buenos Ayres—	
Boletin mensual de Estadistica Municipal. Año II, Abril—Junio, 1888	The Municipal Statistical Bureau
Universidad Nacional de Buenos Aires. 12894! Tesis presentada para optar al Grado de Doctor en Medicina y Cirujia por Norberto Perez. (An Analysis of the Causes of Death in Buenos Ayres in 1887.) 8vo. 1888	
Austria and Hungary—	
Oesterreichische Statistik—	
Band xviii. Heft 2. Statistik der Unterrichtsanstalten, 1885-86	The Central Statistical Commission
Band xix. Statistik der Rechtspflege. Heft 2. Die Ergebnisse des Concursverfahrens, 1885	
Statistische Monatschrift. Juni, Juli, 1888	
Wochenausweis der Sterbefälle in den grösseren österreichischen Städten und Gemeinden. (Current numbers)	
Hungary—	
Magyarország Aruforgalma Ausztriaval es mas Orszagokkal. Fuzet 3—5. (Monthly Trade Returns)	The Royal Hungarian Statistical Bureau
Mittheilungen des kön. ung. Ministeriums für Ackerbau, Industrie und Handel. IV Jahrgang, 1888. Hefte 6—8	The Ministry of Agriculture, &c.
Statistisches Jahrbuch für Ungarn—	
1885. Heft 12. Feuerschäden	The Royal Hungarian Statistical Bureau
1886. Heft 10. Staatshaushalt. Heft 11. Kriegsmacht	
1887. Heft 3. Landwirthschaft	
Ungarns Waarenverkehr mit Oesterreich und anderen Ländern für das Jahr 1887. VII Jahrgang. Fol.	

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Austria and Hungary—*Contd.*	
BUDAPEST. Die Sterblichkeit der Stadt Budapest in den Jahren 1882 bis 1885 und deren Ursachen	M. J. Kőrösi, Budapest
PRAGUE. Bulletin hebdomadaire de la Ville de—, et des Communes-faubourgs. (Current numbers)	The Statistical Bureau of Prague
Belgium—	
Annales des Travaux Publics de Belgique. 1er cahier, tome xlvi, plans, 1888	The Administration of Mines
Relevé officiel du chiffre de la Population du Royaume, 1886-87. 2 parts, fol. Tableau Général du Commerce avec les Pays Étrangers pendant 1886. Fol.	The Bureau of General Statistics, Ministry of the Interior
Tableau du Mouvement Commercial avec les Pays Étrangers. Juin et Juillet, 1888	The Ministry of Finance
BRUXELLES. Bulletin hebdomadaire de Statistique Démographique et Médicale. (Current numbers)	Dr. E. Janssens, Brussels
Bulgaria. Statistique du Commerce avec les Pays Étrangers pendant 1884. La. 8vo.	The Statistical Bureau
China—	
Imperial Maritime Customs—	
Customs Gazette, January—March, 1888 Returns of Trade and Trade Reports for 1887. Part 1. Report on the Trade of China and Abstract of Statistics. Part 2. Reports and Statistics for each Port. Diagrams Le Saint Edit. Étude de Littérature chinoise preparée par A. Théophile Piry. (In French and Chinese). xix + 318 pp., 4to. Shanghai, 1879	Sir Robert Hart, K.C.M.G., Peking
China Branch of the Royal Asiatic Society. Journal. New series, vol. xxii, No. 5. 1887	The Society
Denmark—	
Statistique du Danemark, 4e *Série*—	
Lettre B. No. 5. Justice civile, 1881-85 Lettre C. No. 5. Exploitations agricoles par dépendances en Hartkorn, 1885 Lettre D. No. 11. La Marine Marchande et la Navigation en 1887	The Royal Statistical Bureau of Denmark
Nationalökonomisk Tidsskrift. Ny Række. Hefte 4, 1888	The Danish Political Economy Society
Egypt. Egyptian Statistical Tableau for 1887. 21st issue. Sheet. 1888	Messrs. R. J. Moss and Co., Alexandria
France—	
Ministère de l'Agriculture. Bulletin. VIIe année, Nos. 2, 4, 1888. Maps Statistique Agricole de la France. Résultats généraux de l'Enquête Décennale de 1882. La. 8vo.	The Ministry of Agriculture
Another copy	James Howard, Esq.

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
France—*Contd.*	
Album de Statistique Agricole. Résultats généraux de l'Enquête Décennale de 1882. Diagrams, la. 8vo.	James Howard, Esq.
Compte Général de l'Administration de la Justice civile et commerciale pendant 1882 .... Compte Général de l'Administration de la Justice criminelle pendant 1882..........	The Minister of Justice, Paris
Ministère des Finances. Bulletin de Statistique et de Législation comparée. 1888— (Selection from Contents.)	
Juin. France—Production des alcools en 1887 et 1886. Les quartiers pauvres et les quartiers riches de Paris. Map.......... Juillet. France—Le Sucre, production, commerce et consommation. Russie—L'Industrie sucrière et l'impôt. Chili—Le commerce extérieur et le Cabotage .... Août. Espagne—Mouvement de la Propriété foncière. Portugal—Monopole de la fabrication des Tabacs. Russie—Le régime des spiritueux	The Ministry of Finance
Ministère des Travaux Publics. Bulletin. Statistique et Legislation comparée. Juin, 1888	The Ministry of Public Works
Tableau Général du Commerce de la France avec ses Colonies et les Puissances Étrangères pendant 1887	The Director-General of Customs
Annuaire publié par le Bureau des Longitudes, pour 1856, 1862, et 1871. 3 vols., 12mo.......... Rapport sur les Opérations des Sociétés de Secours Mutuels pendant 1879 et 1881. Maps, 2 vols., 4to. Rapport par la Commission de Surveillance des Caisses d'Amortissement et des Dépôts et Consignations sur les opérations des années 1876-78. 4to. .... Rapport sur les Caisses d'Epargne. Années 1873, 1878, et 1879. Maps, 3 vols., 4to. .... Statistique des Pêches Maritimes, 1866. 8vo.	J. H. B. De Jouy, Esq., Paris
L'Economiste Français. (Current weekly numbers)..........	The Editor
Revue des Banques. Recueil mensuel des Institutions de Credit et de Prevoyance. Tome vii, fasc. 7—9. 1888	M. E. Fournier de Flaix, Paris
Revue Bibliographique Universelle—	
Partie Littéraire. Juin—Août, 1888 .... „ Technique. Juin—Août, 1888..........	The Editor
Revue Géographique Internationale. Nos. 150 et 151. 1888	„
Revue d'Economie Politique. IIᵉ année, No. 4. 1888. (Contents.) Les communautés de famille et de village: *E. De Laveleye.* De l'abondance de la monnaie métallique: *M. Mongin.* Le droit de propriété dans la Société franque et en Germanie: *G. Platon.* Le viiiᵉ Centenaire de l'Université de Bologne: *A. Jourdan*	„
Annales de l'Ecole Libre des Sciences Politiques. IIIᵉ année, No. 3, 1888. (Selection from Contents.) L'Incidence des Impôts sur l'Intérêt des Capitaux: *A. Delatour.* L'Afrique équatoriale—Ogouué, Congo, Zambèze: *L. Poinsard.* Du Frai des monnaies, specialement dans l'Union latine: *P. Fanchille.* La Conférence Internationale des Sucres: *L. Poinsard*	The Institution

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
France—*Contd.*	
Journal de la Société de Statistique de Paris. 1888—	
Juillet. Essai de météorologie économique et sociale: *A. de Foville.* Les Tarifs de Chemins de fer: *M. Hoffmann.* *Variété*—L'Espagne et sa population	The Society
Août. Une ferme de cent hectares, d'après les résultats de l'enquête agricole de 1882: *A. Coste.* L'Empire du Japon: *T. Loua*	
Septembre. La Fécondité des mariages aux Pays-Bas et les causes de sa variation: *A. Beaujon.* Le sixième Congrès international d'hygiène et de démographie: *A. Liégeard.* La Statistique des maladies dans l'Union des chemins de fer allemands: *M. Hoffmann*	
Germany—	
Monatshefte zur Statistik des Deutschen Reichs. Mai—Juli, 1888	The Imperial Statistical Bureau
Statistik des Deutschen Reichs. Neue Folge—	
Band xxx. Kriminalstatistik, 1886. Diagram-maps	
Band xxxi. Statistik der Krankenversicherung der Arbeiter, 1886	
Band xxxiii. Waarenverkehr des Deutschen Zollgebiets mit dem Auslande, 1887. Theil 1	
Band xxxv. Statistik der Seeschiffahrt, 1887. Abth. 1	
Statistisches Jahrbuch für das Deutsche Reich. Neunter Jahrgang, 1888. Maps	
Prussia—	
Preussische Statistik. lxx. Statistik der Brände im preussischen Staate, 1883-84. Theil 2	The Royal Statistical Bureau of Prussia
Zeitschrift des K. Preussischen Statistischen Bureaus. xxviii Jahrgang, 1888. Heft 1, 2. Map	
SAXONY. Zeitschrift des K. Sächsischen Statistischen Bureaus. Zweites Supplementheft zum xxxii Jahrgang 1886 enthaltend. Die Ergebnisse der Sächsischen Gewerbezählung vom 1882	The Royal Statistical Bureau of Saxony
Berlin—	
Ermittelungen über die Lohn-Verhältnisse in Berlin Mai, 1887	The Statistical Bureau of Berlin
Veröffentlichungen des Statistischen Amts der Stadt Berlin. Eheschliessungen, Geburten, Sterbefälle, und Witterung. (Current numbers)	
FRANKFURT AM MAIN. Statistische Mittheilungen über den Civilstand, im Jahre 1887. 4to.	The Statistical Bureau of Frankfort
HAMBURG. Tabellarische Uebersichten des Handels und der Schiffahrt Hamburgs im Jahre 1887	The Statistical Bureau of Hamburg
Archiv für Soziale Gesetzgebung und Statistik. Erster Jahrgang. Heft 2. 8vo. 1888	The Editor
Greece. Bulletin mensuel du Commerce avec les Pays Étrangers. Mars—Juin, 1888	The Statistical Bureau of Greece

Donations—Contd.

Donations.	By whom Presented.
(a) Foreign Countries—*Contd.*	
Italy—	
Annali di Agricoltura, 1887-88—	
100. Studio sulle Endemie del Cretinismo e del Gozzo	The Director-General of Agriculture
129. Notizie sulla Pesca Marittima in Italia	
141. Irrigazioni e Laghi artificiali della Spagna	
149. Rivista del Servizio Minerario nel 1886. Maps and diagrams	
151. Le R. Scuole Pratiche e Speciali di Agricoltura nel Biennio 1885-86 e 1886-87	
152. Concorsi Agrari Regionali. Concorso di Arezzo	
Annali di Statistica—	
Elenco delle Pubblicazioni Statistiche fatte dal Ministero di Agricoltura, Industria e Commercio, 1861-87	The Director-General of the Statistics of Italy
Statistica Industriale. Fasc. 11 e 12. (Provincie di Cagliari, Sassari, e Salerno.) Maps	
Bollettino di Legislazione e Statistica Doganale e Commerciale. Anno V. Giugno. 1888	
Bollettino mensile delle situazioni dei Conti degli Istituti d'Emissione. Anno xix, No. 5. 1888	
Bollettino del Ministero degli Affari Esteri. Parte Prima. Vol. i. Fasc. 5, 6. Vol. ii. Fasc. 1. 1888	
Bollettino di Notizie sul Credito e la Previdenza. Anno vi, Nos. 7—9. 1888	
Bollettino Semestrale del Credito Cooperativo, Ordinario, Agrario, e Fondiario. Appendice, 1888	
Bollettino Settimanale dei Prezzi di alcuni dei principali Prodotti Agraria e del Pane. (Current numbers)	
Bollettino Sanitario (Direzione della Sanita Pubblica). Maggio, Giugno, 1888	
Commissione Reale d'Inchiesta sulle Opere Pie. Statistica delle Opere Pie, 1880 e die Lasciti di Beneficenza fatti nel quinquennio 1881-85. Vol. iv. Liguria	
Movimento Commerciale del Regno d'Italia nell' anno 1887	
Movimento della Navigazione nei Porti del Regno nell' anno 1887	
Risultati dell' Inchiesta sulle Condizioni Igieniche e Sanitarie nei Comuni del Regno. Relazione Generale, 1886	H. Ling Roth, Esq., Halifax
Statistica del Commercio Speciale di Importazione e di Esportazione. Maggio, Giugno, 1888	The Director-General of the Statistics of Italy
Statistica Elettorale Amministrativa. 8vo. 1888	
Statistica dell' Istruzione Elementare per l'anno Scolastico 1884-85. Introduzione. 8vo.	
Statistica dell' Istruzione Secondaria e Superiore per l'Anno Scolastico 1885-86. Introduzione	
NAPLES. Bollettino Medico Demografico del comune. Nos. 16—20. 1888	The Statistical Bureau
L'Economista. (Current weekly numbers.) Florence	The Editor
Giornale degli Economisti. Anno III, 1888—	
Fasc. 4. Delle trasformazioni vecchie e recenti dell' agricoltura nostra e forestiera: *C. Bertagnolli.* Appunti di Statistica teoretica a proposito d'una nuova opera di Augusto Meitzen: *G. Salvioni.* Legislazione dell' alcool nella Svizzera: *B. Stringher*	"

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Italy—*Contd.*	
Giornale degli Economisti. *Anno III*, 1888—*Contd.* Fasc. 5. Le corporazioni di arti e mestieri in Italia nei secoli xvi e xvii: *C. Supino.* La recente evoluzione della metodologia nella scienza economica tedesca: *C. Artom.* Le scuole superiori di commercio: *E. Morelli.* Le banche Nazionali e la valuta negli Stati Uniti d'America: *G. Rodolico*	The Editor
Japan—	
A Brief Review of the Operations of the Home Department in connection with the Cholera Epidemic of 1886. Maps	The Central Sanitary Bureau
Table showing the daily number of cases and deaths of Cholera in different Localities in 1886	
Mexico—	
Boletin semestral de la Estadistica de la Republica Mexicana. Año de 1888. No. 1, sm. fol.	Dr. A. Peñafiel, Mexico
Estadistica General de la Republica Mexicana. Año III. No. 3, 1887. Sm. fol.	
Nombres Geográficos de Mexico. Catalogo Alfabetico de los Nombres de Lugar Pertenecientes al Idioma "Nahuatl" Estudio Jeroglifico por el Dr. Antonio Peñafiel (with a Volume of Plates). La. 8vo. 1885	
Netherlands—	
Statistiek der Geboorten en der Sterfte, naar den Leeftijd ende oorzaken van den dood in Nederland, April—June, 1888	The Department of the Interior
Statistiek der Scheepvaart, 1877-86. In 29 parts. Fol. and 4to., maps	The Netherlands Government
Statistiek der Scheepvaart, 1887. Tweede Gedeelte. Map., 4to	The Netherlands Legation
Statistiek van den Loop der Bevolking van Nederland over 1887	
Vijfjarig Overzicht van de Sterfte naar den Leeftijd ende Oorzaken van den Dood in elke Gemeente van Nederland gedurende 1880-85	
Annuaire Statistique des Pays-Bas pour 1887 et années antérieures. No. 7	The Statistical Institute
Bijdragen van het Statistisch Instituut. No. 2, 1888. Vierde Jaargang	
Paraguay. Revue du Paraguay. Nos. 1—4. 1$^{\text{ère}}$ année, 1888. 8vo.	The General Statistical Bureau
Russia—	
Statistique de l'Empire de Russie—	
ii. Statistique des Aveugles en Russie en 1886. Maps	The Central Statistical Committee
iii. Statistique des universités et des écoles moyennes dans la Russie d'Europe et les gouvernements de la Vistule, 1880	

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Russia—*Contd.*	
Commerce extérieur de la Russie par les frontières d'Europe et d'Asie en 1887. (In Russian)	The Department of Customs
Commerce extérieur par la frontière d'Europe. Avril—Juin, 1888. (In Russian)............	
Journal of the Ministry of Finance. (Current weekly numbers.) (In Russian). 1888	M. A. Vessélovsky, St. Petersburg
Spain—	
Estadistica General del Comercio Exterior de España en 1856. La. 4to.	J. H. B. De Jouy, Esq., Paris
Memorias Comerciales y Suplemento, 1888—	
11. Rotterdam, Salonica y Abo............	The Board of Customs
13. Neuva-York y Atenas	
14. Malmoe, Varsovia y Boston	
15. Wurttemberg, Kiel y Lisboa	
16. Niza, Mersina, Rostock, Budapest y Odessa	
17. Manchester, Guayaquil y Baltimore	
Reseña Geográfica y Estadística de España por la Direccion General del Instituto Geográfico y Estadistico. xxiv + 251 + 1116 pp., map, 4to. Madrid, 1888	The Institute
Boletin de la Sociedad Geográfica de Madrid. Tomo xxiv, Nos. 4—6. 1888	The Society
Sweden—	
Bidrag till Sveriges Officiela Statistik—	
I. Telegrafväsendet, 1887. (Telegraphs)	The Central Statistical Bureau
K. Helso-och Sjukvården, 1886. (Sanitary Condition)............	
N. Jordbruk och Boskapsskötsel, 1886. (Agriculture)	
O. Landtmäteriet, 1887. (Surveying)	
P. Undervisningsväsendet, 1882-83. (Education)....	
T. Lots-och Fyrinrättningen samt Lifräddnings-Anstalterna å Rikets Kuster, 1887. (Pilotage, Lighthouses, Lifeboats.) Maps............	
N. Kommunernas Fattigvård och Finanser, 1886. (Poor Relief)............	
General-Sammandrag öfver 1887 års Bevillning. Sheet	
Kapital-Konto till Riks-Hufvud-Boken för år 1886	
Ofversigt af de enskilda, sedelutgifvande bankernas ... 1887. 4to.	
Ofversigt af Sveriges Riksbanks Ställning, sammanfattad efter 1887 års bokslut. 4to.	
Riksstat för år 1889. Sm. 4to............	
Rikets in-och Utförsel af vissa varor Jan.—Dec., 1885-86 och 1887. Jan.—Juni, 1885-88. 12 parts	
Sammandrag af Riksbankens Ställning den 30 Juli, 1887—den 30 Juni, 1888. 12 parts............	
Sammandrag af de solidariska enskilda bankernas samt aktiebankernas och kreditaktiebolagens uppgifter för den 31 Juli, 1887—30 Juni, 1888............	
Uppgifter om Hypoteksbanken och Hypoteksföreningarne för år 1887	

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Switzerland—	
Statistique du Commerce de la Suisse avec l'Étranger en 1887. Diagrams. Fol.	The Federal Department of Customs.
AARGAU. Aargauische Statistische Mittheilungen für 1888. Heft II. Landwirthschaftsstatistik, &c. Fol.	The Statistical Bureau
GENEVA. Bibliothèque Publique. Compte-Rendu pour 1887. 8vo.	The Librarian
Journal de Statistique Suisse. 2 Quartal-Heft. 1888.	The Federal Statistical Bureau
United States—	
Preliminary Report of the Eighth Census, 1860	The American Statistical Association
Tenth Census of the United States, 1880. Vol. xii. Mortality and Vital Statistics. Part ii (with a separate volume of plates and diagrams). 4to. 1886	The Hon. G. F. Hoar, Washington
Reports of the Commissioner of Agriculture for 1885, 1886, and 1887. 3 vols., maps and plates, 8vo.	W. C. Ford, Esq.
Report of the Commissioner of Agriculture, 1887. Plates and diagrams	The Commissioner
Department of Agriculture—	
Third Annual Report of the Bureau of Animal Industry for 1886. Plates	W. C. Ford, Esq., Washington
Reports of the Bureau of Statistics of the— (Nos. 37—47.) [January—December. 1887.] 1 vol.	The Department of Agriculture
Monthly Reports on the Condition of Crops, &c. June—August, 1888	
Statistical Abstract of the United States, 1887. Tenth number	The Bureau of Statistics, Treasury Department
Report on the Internal Commerce of the United States, 1887. (Commerce of the Mississippi and Ohio Rivers)	
Quarterly Report on Imports, Exports, Immigration, and Navigation for the three months ending 31st March, 1888. [No. 3. 1887-88]	
Summary Statement of Imports and Exports. Nos. 11, 12. 1887-88	
Reports from the Consuls of the United States. Nos. 91 and 92, March and April, 1888. Maps and plans	The Department of State
Third Annual Report of the Commissioner of Labor, 1887. Strikes and Lockouts	The Commissioner
Proceedings of the Committee on Manufactures, House of Representatives, in relation to Trusts and the Standard Oil Trust. 1888	W. C. Ford, Esq.
MASSACHUSETTS. [First] Report of the Bureau of Statistics of Labor, embracing the account of its Operations and Inquiries from August, 1869, to March, 1870, inclusive	Charles F. Pidgin, Esq., Boston
MICHIGAN. The first six Annual Reports of the Secretary of State relating to the Registry and Return of Births, Marriages, and Deaths for 1867 to 1872. 6 vols.	The American Statistical Association
NEW JERSEY. Fifth Annual Report of the Bureau of Statistics of Labor and Industries for 1882	
NEW YORK State. Annual Report of the Department of Police and Excise of the City of Brooklyn for 1887	F. L. Jenkins, Esq., Brooklyn

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
United States—*Contd.*	
Pennsylvania—	
Annual Report of the Secretary of Internal Affairs for the year ending 30th November, 1886. Part 1. Land Office. 2. Assessments. 3. Industrial Statistics, 1886. 4. Railroad, Canal, Navigation, and Telegraph Companies for 1886. 3 vols., plans and plates, &c.	The American Statistical Association
Annual Report of the Superintendent of Soldiers' Orphans for 1886	
Fourteenth Annual Report of the Insurance Commissioner for 1886. Part 2. Life and Accident Insurance	
Annual Report of the Adjutant General for 1886	
Seventeenth Annual Report of the Board of Commissioners of Public Charities for 1886; also Reports and Statistics of Lunacy. Plates	
Reports of the Inspectors of Mines of the Anthracite Coal Regions of Pennsylvania for 1886. Plates, &c.	
Report of the Pennsylvania State College for 1886, with the Financial Reports for 1885 and 1886. Plates	
Report of the State Commissioners of Fisheries for 1885 and 1886. Plates	
Report of the Superintendent of Public Instruction for the year ending 6th June, 1887	
The Common School Laws of—, and Decisions of the Superintendent, with Explanations, Forms, &c. 12mo. 1888	
Rhode Island—	
Monthly Reports of Deaths in the City of Providence. Nos. 395, 397. 1888	Dr. E. M. Snow, Providence
Twenty-third Annual Report upon Births, Marriages, and Deaths in the City of Providence for 1887	
Bankers' Magazine. July—August, 1888. New York	The Editor
Bradstreet's Journal. (Current weekly numbers.) 1888	”
Commercial and Financial Chronicle. (Current weekly numbers.) 1888	”
The Underwriter, a National Insurance Journal. Vols. v, 1873; xii, 1879; xiv—xvi, 1881-83. 5 vols., 4to. Philadelphia	W. C. Ford, Esq., Washington
Academy of Natural Sciences of Philadelphia—	
Annual Reports for 1886	The American Statistical Association
Act of Incorporation and Bye-Laws, 1885	
The Claims of the—, to Public Favor. An Address by W. S. W. Ruschenberger. 1871	
American Geographical Society. Bulletin. Vol. xx, No. 2. 1888	The Society
American Philosophical Society. Proceedings. Vol. xxv, No. 127. 1888	”
American Protective Tariff League. Eleven Leaflets. (Nos. 6—18, and 2 not numbered.) New York, 1887	W. C. Ford, Esq.

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
United States—*Contd.*	
American Social Science Association—	
Journal of Social Science: containing the Transactions of the—. No. 1, June, 1869	D. R. Dewey, Esq., Boston
Proceedings of the [3rd] Conference of Charities held . . . at Saratoga, 1876	
Cooper Union. Twenty-ninth Annual Report of the Trustees, 1888	The Union
Franklin Institute. Journal. July, August, 1888	The Institute
Smithsonian Institution. Annual Report of the Board of Regents, July, 1885. Part 2. Maps and plates, 8vo. 1886	The Institution
Political Science Quarterly. Vol. iii, 1888—	
No. 2. Control of Immigration: *R. M. Smith.* Surplus Revenue: *C. F. Randolph.* Reform of the Federal Service: *F. P. Powers.* The State and the Poor: *H. W. Farnam.* The English Local Government Bill: *F. J. Goodnow.* The German Emperor: *J. W. Burgess*	The Editor
No. 3. Economic and Social Aspects of Trusts: *G. Gunton.* Inequality of the States: *W. A. Dunning.* Suspension of Habeas Corpus during the War of the Rebellion: *S. G. Fisher.* Constitutions of the State of New York: *J. H. Dougherty*	
Quarterly Journal of Economics. Vol. ii, 1888. No. 4. (Contents.) Wage Statistics and the next Census of the United States: *R. M. Smith.* Ruskin as a Political Economist: *F. J. Stimson. Notes and Memoranda*—The Distribution of Products. Business Profits and Wages. The Rate of Interest. Tariff Acts under the Confederation. Notes on early Banking Schemes	„
Venezuela. Gaceta Oficial. (Current numbers.) 1888	Statistical Bureau
International. Congresso Internazionale di Beneficenza in Milano, Agosto, 1880. Comitato Ordinatore. La Beneficenza in Milano. Notizie Storico-Economico-Statistiche raccolte per incarico del comitato dal sacerdote Luigi Vitali. xxxi + 637 pp., la. 8vo. Milano, 1880	H. Ling Roth, Esq.
(b) **India, Colonial, and other Possessions.**	
India, British—	
Statistical Abstract relating to British India from 1877-78 to 1886-87. Twenty-second number. [C-5534.] 1888	The Record Department, India Office
Prices and Wages in India. Sixth issue. Parts 1, Average Annual Prices of Food-Grains and Salt (1861-87). 2, Fortnightly Prices of Food-Grains and Salt for 1887. 3, Wages of Skilled and Unskilled Labour (1873-87). 8vo.	The Department of Finance and Commerce, Calcutta
Trade and Navigation. Monthly Accounts. Nos. 1—3, 1888-89	
Trade by Land with Foreign Countries. Monthly Accounts. Nos. 11 and 12, 1887-88. No. 1, 1888-89	

Donations—Contd.

Donations.	By whom Presented.
(b) **India, Colonial, and other Possessions**—*Contd.*	
India, British—*Contd.*	
BOMBAY Presidency. Report on the Operations in connection with the Income Tax for the year 1886-87. Fol.	J. A. Baines, Esq., Bombay
India Office. Catalogue of the Library of the— and Index. Vol i (in 2 vols.). 8vo., 1888	The Secretary of State in Council of India
Asiatic Society of Bengal—	
Journal. Vol. lvi, part 2, No. 4, 1887. Vol. lvii, part 2, No. 1, 1888. Plates	The Society
Proceedings. February and March, 1888. Maps and plates	
Canada, Dominion of—	
Sessional Papers, Session 1888—	
Vol. i. Public Accounts for 1886-87. Estimate for 1888-89	J. G. Bourinot, Esq., LL.D., &c., Ottawa
„ ii. Report of the Auditor-General on Appropriation Accounts for 1886-87	
„ iii. Trade and Navigation for 1886-87	
„ iv. Report of the Minister of Agriculture for 1887	
„ v. Report on Canadian Archives, 1887. Map.	
„ vi. Criminal Statistics for 1886. Mortuary Statistics for 1887. Report on Experimental Farms for 1887	
„ xi. Report of the Department of Militia and Defence, 1887. Report on Penitentiaries for 1886-87. Report of the Secretary of State for 1887. Report of Department of Public Printing and Stationery for 1886-87. Report of Board of Examiners for the Civil Service for 1887. Report on the Antwerp International Exhibition for 1885	
„ xii. Report of the Postmaster-General for 1886-87. Report of the Department of the Interior for 1887	
„ xiii. Report of the Department of Indian Affairs for 1887	
„ xv. List of Shareholders in Chartered Banks, 1887. Civil Service List of Canada. Report on the Library of Parliament	
Budget Speech of Sir Charles Tupper, Minister of Finance, 1888. Diagrams	
Canal Statistics for Season of Navigation 1887	
Correspondence relative to seizure of British American Vessels by the United States Authorities in 1886-87	
Correspondence relative to the Fisheries Question, 1887-88	
Report on the Fisheries Protection Service of Canada, 1887	
Proceedings of the Colonial Conference at London in 1887 in relation to Imperial Postal and Telegraphic Communications through Canada	
Criminal Statistics for 1886	

Donations—Contd.

Donations.	By whom Presented.
(b) **India, Colonial, and other Possessions**—*Contd.*	
Canada, Dominion of—*Contd.*	
Report of the Select Committee on Fraudulent Practices upon Farmers of the Dominion, 1888	J. G. Bourinot, Esq., LL.D., &c., Ottawa
Railway Statistics of Canada, 1887	
Supplement to Minister of Public Works' Report for 1886-87	
Royal Society of Canada, Proceedings and Transactions for 1887. Vol. v, plates, 4to.	The Society
Insurance and Finance Chronicle. June—August, 1888	The Editor
Cape of Good Hope.	
Statistical Register of the Colony for 1887, containing also Agricultural Statistics for 1888	The Colonial Secretary
Another copy	Hon. J. X. Merriman
Report of the Superintendent-General of Education for 1887. Fol.	The Education Office
Durban Chamber of Commerce, Natal. Annual Report for 1887. 8vo.	The Chamber of Commerce
Jamaica. Annual Report of the Registrar-General for the year ending September, 1887. Fol.	The Registrar-General of Jamaica
New South Wales. Blue Book for 1887	The Government Statistician
New Zealand—	
Government Insurance Department—	
Annual Report of the Government Insurance Commissioner for 1887. Fol.	D. M. Luckie, Esq., Wellington
Quinquennial Investigation, 1885. Second Division of Profits. Annual Report, 1886	
Case for opinion drawn up by F. W. Frankland, Government Actuary and Statist, on behalf of the—, with opinion of the Actuaries consulted. Fol., 1888	The Author
Queensland. Supplement to the Government Gazette (containing Vital Statistics). Nos. 15, 37, and 64. 1888	The Registrar-General of Queensland
Trinidad—	
Synopsis of Wardens' Returns for 1887. [Giving numbers of Landowners, Taxpayers, Householders, &c.] Sheet	H. J. Clark, Esq., Trinidad
Our Trade with Venezuela (1878-87). Fol. 1888	
Victoria—	
Statistical Register of Victoria for 1886, and parts 1 and 2 for 1887	H. H. Hayter, Esq., C.M.G., Government Statist
Ninth Annual Report of the Government Statist on Friendly Societies for 1886	
Second Annual Report of the Proceedings of the Government Statist in connection with Trades Unions. Report for 1887	
The Gold Fields of Victoria. Reports of the Mining Registrars for the quarter ended March, 1888. Plates and plans. Fol.	The Mining Department

Donations—Contd.

Donations.	By whom Presented.
(c) **United Kingdom and its several Divisions.**	
United Kingdom—	
Army Medical Department. Report for 1886, with Appendix. Vol. xxviii	The Department
Army Veterinary Department—	
Annual Returns of Sick and Lame Horses for 1881-83. Fol.	Dr. George Fleming, C.B.
Annual Reports and Statistical Returns for 1884-86.	
Board of Trade Journal, 1888— (Selection from Contents.)	
June. Shipbrokerage Fees in French Ports. The Co-operative Congress. Factory Operatives in Germany. Agricultural Statistics of Germany	The Board of Trade
July. Water Power employed in Manufacturing in the United States. Condition of Labour in the State of New York. The Sprat Fisheries of France. The Resources of New Mexico and Dakota	
August. Tea Cultivation in Assam. French Legislation for regulating Female and Child Labour. Brazil as a Field for Emigration. Flax Industry of the United States	
September. Cost of Manufacturing Worsted Coatings in England and the United States. Cattle Breeding in Russia. The Russian Sugar Industry	
Mining and Mineral Statistics of the United Kingdom for 1887. [C-5464.] 1888	Secretary of State for Home Department
Railway Returns for England and Wales, Scotland, and Ireland for 1887. [C-5480.] 1888	The Board of Trade
Railways. General Report on the Share and Loan Capital, Traffic in Passengers and Goods, and the Working Expenditure and Net Profits from Railway Working of the Railway Companies for 1887. [C-5504.] 1888	
Railways of the United Kingdom. Summary of Statistics of—, for the years 1877, 1883-87. Sheet..	J. Shillito, Esq., York
Statistical Abstract for the United Kingdom for 1873-87. Thirty-fifth number. [C-5506.] 1888 ...	The Board of Trade
Statistical Miscellany [of Parliamentary Papers]. Vols. i—xii. Fol.	Mrs. Levi
Trade of the United Kingdom with Foreign Countries and British Possessions. Annual Statement for 1887. [C-5451.] 1888	The Board of Trade
Trade and Navigation. Monthly Returns. June—August, 1888	
England—	
Births and Deaths in London, and in twenty-seven other great Towns. (Weekly Returns.) (Current numbers)	The Registrar-General of England
British Museum. Catalogue of Printed Books. 5 parts. 4to. 1888	The Trustees of the British Museum
London—	
Criminal Returns of the Metropolitan Police for 1887	The Chief Commissioner of Police
Metropolitan Asylums Board. Annual Reports of the Statistical Committee and the Medical Superintendents of the Infectious Hospitals and Imbecile Asylums for 1887. 8vo.	The Board

Donations—Contd.

Donations.	By whom Presented.
(c) **United Kingdom and its Divisions**—*Contd.*	
England—*Contd.*	
London—*Contd.*	
Wandsworth District. Report on the Sanitary Condition of the, during 1887. 8vo.	The District Board of Works
BIRMINGHAM. Report on the Health of the Borough for 1887. Map and diagrams, 8vo.	The Medical Officer of Health
Ireland—	
Twenty-fourth Detailed Annual Report of the Registrar-General of Marriages, Births, and Deaths in 1887. [C-5537.] 1888	The Registrar-General of Ireland
Quarterly Return of Marriages to March, Births and Deaths to June, 1888. No. 98	
Births and Deaths in Dublin, and in fifteen of the principal Urban Sanitary Districts. (Weekly Returns). (Current numbers)	
Scotland—	
Quarterly Return of Births, Deaths, and Marriages for the Quarter ending 30th June, 1888. No. 134	The Registrar-General of Scotland
Births, Deaths, and Marriages in the eight principal Towns. (Weekly and Monthly Returns.) (Current numbers)	
(d) **Authors, &c.**	
ATKINSON (EDWARD). On the Collection of Revenue. 70 pp., 8vo. Boston, 1867	The American Statistical Association
BASTABLE (C. F.). Homestead Laws. 16 pp., 8vo. Dublin, 1887	The Author
BIGGS (T. HESKETH). The Grammar of Indian Finance, 1883-84 to 1886-87. vi + 37 pp., 8vo. Rangoon, 1888	"
BOINET (A., BEY). Essai de Statistique Agricole. Superficie des diverses Cultures de l'Égypte, 1887. 35 pp., 8vo. Caire, 1888	"
BOURINOT (JOHN GEORGE). Manual of the Constitutional History of Canada from the earliest period to the year 1888. xii + 238 pp., 8vo. Montreal, 1888	"
BOURNE (WILLIAM). Bourne's Handy Assurance Manual, 1888. (First year of publication.) 124 pp., 8vo., 1888	"
CAREY (M.). The New Olive Branch: or an attempt to establish an Identity of Interest between Agriculture, Manufactures, and Commerce. Second edition. 130 pp., 8vo. Philadelphia, 1821	—
CLARK (HENRY JAMES). The Material and Moral Progress of Trinidad during the last fifty years. 8 pp. Port of Spain, 1888	The Author
CRAIGIE (MAJOR P. G.). Local Taxation in Great Britain. 24 pp., la 8vo. Rome, 1888	"
DALLA VOLTA (RICCARDO). Sulla recente Depressione Economica. 40 pp., 8vo. Firenze, 1888	"
DU PUYNODE (GUSTAVE). Des Lois du Travail et de la Population. 2 vols., 8vo. Paris, 1860	—

Donations—Contd.

Donations.	By whom Presented.
(d) **Authors, &c.**—*Contd.*	
Fenton (J. J.). The Public Finances, Loans, and Statistics of Australia and Tasmania. 31 pp., 8vo. Melbourne. [1888]	The Author
Fiorese (Sabino). Il Socialismo di Stato nella Ragione e nella Vita Odierna libri due d' un saggio di Filosofia Economica. xix + 246pp., 8vo. Bologna, 1888	„
Foville (Alfred De). Les Éléments caractéristiques de la Statistique Nationale. 11 pp., diagram, 8vo. Paris, 1887	„
Hooper (George N.). Proposals . . . for adapting School Studies and Teaching to the requirements of those having to maintain themselves . . . after leaving School. 33 pp., 8vo. 1888	C. M. Kennedy, Esq., C.B.
Johnson (George). Johnson's Graphic Statistics. viii + 80 pp. of diagrams, 8vo. Ottawa, [1887]	J. G. Colmer, Esq., C.M.G.
Körösi (*J.*)— Die hauptstädtische Feuerversicherung. 7 pp., 8vo. Bulletin Annuel des Finances des Grandes Villes. VIIe année, 1883. 47 pp., la. 8vo. 1888	The Author
Laffan (Thomas). The Medical Profession in the Three Kingdoms in 1887. The Essay to which was awarded the Carmichael Prize of 100*l.* by the Council of the Royal College of Surgeons, Ireland, 1887. viii + 385 pp., 8vo. Dublin, 1888	The Royal College of Surgeons in Ireland
MacDowall (Alex. B.). Curve Pictures of London for the Social Reformer. 49 pp, diagrams, 8vo. 1888	The Author
McDonnell (W. D.). A History and Criticism of the Various Theories of Wages: being the Whately Memorial Prize Essay for 1887. 72 pp., 8vo. Dublin, 1888	„
Mayr (Geogr von). Arbeiterversicherung und Sozialstatistik. 59 pp., 8vo. Tübingen [1888]	„
Mordecai (Gratz). Notes on the Classification of Railroad Accounts and the Analysis of Railroad Rates. 9 pp., 8vo. 1888	„
Moreau de Jonnès (Alex.). Recherches Statistiques sur l'Esclavage Colonial et sur les moyens de le supprimer. 275 pp., 8vo. Paris, 1842	—
Mueller (Dr. Traug). Untersuchungen über den gegenwärtigen Stand der Agrarstatistik . . . viii + 184 pp., 8vo. Jena, 1888	Professor J. Conrad, Halle
Neymarck (Alfred). Colbert et son Temps. 2 vols., 8vo. Paris, 1877	—
Norfolk (*Ernest W.*)— Compensation. Should compensation be given on the compulsory extinction of Licences, and if so, from what source? 22 pp., 8vo. 1886 Licensing Points. Second edition, revised and enlarged. 352 + cxlviii pp., 8vo. 1886	The Author
Petersen-Studnitz (Aleksis). Om Arbejdsstatistik. 26 pp., 8vo. Kobenhavn, 1888	„
Pitkin (Timothy). A Statistical View of the Commerce of the United States of America: its connection with Agriculture and Manufactures; and an Account of the Public Debt, Revenues, and Expenditures of the United States. Second edition, with additions and corrections. xii + 445 + vii pp., 8vo. New York, 1817	—

Donations.	By whom Presented.
(d) Authors, &c.—*Contd.*	
PLATT (JAMES). Democracy. xxvi + 184 pp., 8vo. 1888	The Author
RAFFALOVICH (ARTHUR). L'Année Economique (1887-88). Finances Publiques, Législation Economique, Tarifs Douaniers, Socialisme, Marchés Financiers et Commerciaux. 331 pp., 8vo. Paris, 1888	"
RIVINGTON (WALTER). The Medical Profession of the United Kingdom, being the Essay to which was awarded the first Carmichael Prize of 200*l.* by the Council of the Royal College of Surgeons in Ireland, 1887. 1200 pp., 8vo. Dublin, 1888	The Royal College of Surgeons in Ireland
ROHDE (R. T.). A Practicable Decimal System for Great Britain and her Colonies. vi + 15 pp., illustrations, 8vo. 1888	The Author
SALERNO (GUISEPPE RICCA). Scienza delle Finanze. x + 263 pp., 8vo. Firenze, 1888	M. G. Barbera, Firenze
SARGANT (WILLIAM L.). Essays of a Birmingham Manufacturer. Vol. ii. 341 pp., 8vo. 1870	The Author
SMITH (RICHMOND M.). Wage Statistics and the next Census of the United States. 29 pp., 8vo. [1888.]	"
STEVENSON (JAMES). The Arabs in Central Africa and at Lake Nyassa . . . 16 + 6 pp., 8vo. Glasgow, 1888	"
TALLACK (WILLIAM). Penological and Preventive Principles, with special reference to Europe and America; and to the Diminution of Crime, Pauperism, and Intemperance . . . x + 414 pp., 8vo. 1889	The Howard Association
TRACY (Count DESTUTT). A Treatise on Political Economy; to which is prefixed a Supplement to a preceding work on the understanding or Elements of Ideology; with an Analytical Table and an Introduction on the Faculty of the Will. xxviii + 254 pp., 8vo. Georgetown, 1817	—
WARDEN (D. B.). Description Statistique, Historique et Politique des États-Unis de l'Amérique Septentrionale, depuis l'Epoque des premiers Etablissements jusqu'à nos Jours. 5 vols., maps and plate, 8vo. Paris, 1820	Worthington C. Ford, Esq., Washington
WRIGHT (CARROLL D.). The Growth and Purposes of Bureaus of Statistics of Labor. 17 pp., 8vo. Boston, 1888	The Author
(e) Societies, &c. (British).*	
Association of Chambers of Commerce. Memorandum on the Salonica Nisch Railway as a means of opening Southern Servian Markets to British Commerce. 8vo. 1888	C. M. Kennedy, Esq., C.B., London
Bimetallic Conference. Proceedings of the, held at Manchester . . . 1888. 128 pp., 8vo. Manchester, 1888	H. McNiel, Esq.
Blairlodge School. Commercial Bureau. Report by R. C. Millar to the Scotch Education Department. 8vo. 1888	The Author
Church of England Burial, Funeral, and Mourning Reform Association. Eight Annual Report, 1886. 8vo.	The Rev. F. Lawrence

---

* Foreign and Colonial Societies will be found under the various countries or possessions to which they belong.

Donations—Contd.

Donations.	By whom Presented.
(e) **Societies, &c. (British)**—*Contd.*	
Cobden Club. Report of the Annual General Meeting, 1888, including an Address by G. W. Medley, Esq., on the Triumph of Free Trade. 8vo.	The Club
East India Association. Journal. Vol. xx, Nos. 3—5, 8vo. 1888	The Association
Institute of Actuaries. Journal of the—, Vol. xxvii, part 3. July, 1888. 8vo.	The Institute
Institute of Bankers. Journal. September, 1888	„
Institution of Civil Engineers. Minutes of Proceedings. Vols. xciii and xciv, plates. 8vo. 1888	The Institution
Institution of Mechanical Engineers—	
Proceedings. No. 2. 1888	„
Address of the President, E. H. Carbutt, Esq. 1888.	The Author
London Chamber of Commerce. Journal. Nos. 77 and 78. 1888.	The Chamber of Commerce
Manchester Statistical Society. Transactions. Session 1887-88. (Contents): Socialism, its Arguments and Aims: *W. Graham.* Prospects of International Arbitration: *R. M. Pankhurst.* A Consideration of some of the Effects of the Landlords' Preferential Position upon Commerce and Agriculture: *R. C. Richards.* Notes on Taxation and Rating: *T. H. Elliott.* Vital Statistics of Towns: *A. Ransome.* The Modern Languages Problem in Modern Education: *L. C. Casartelli.* The Free Library Movement in Manchester: *W. R. Credland.* The Constitution of the United States: *E. J. Hale*	The Society
Midland District Miners' Fatal Accident Relief Society. Actuarial Report as at 31st December, 1887. Fol.	T. Y. Strachan, Esq., London
North Staffordshire Chamber of Commerce. Report of the Council, March, 1888. 8vo.	C. M. Kennedy, Esq., C.B., London
Royal Colonial Institute. Vol. xix, 1887-88. 8vo.	The Institute
Royal Geographical Society. Proceedings. June—August, 1888	The Society
Royal Medical and Chirurgical Society. Proceedings. April - June, 1888	„
Royal Society. Proceedings. Nos. 268—270. 1888	„
Royal Society of Edinburgh—	
Proceedings. Sessions 1883-84 to 1886-87. 4 vols. 8vo. Maps and plates Transactions. Vol. xxx, part 4; vol. xxxi; vol. xxxii, parts 2—4; vol. xxxiii, parts 1 and 2. Plates. 4to. Sessions 1882-83 to 1886-87	„
Royal United Service Institution. Journal. Vol. xxii. No. 144. 1888. Plates. 8vo.	The Institution
St. Bartholomew's Hospital. Statistical Tables of the Patients under treatment during 1887. 8vo.	The Hospital
Society of Accountants and Auditors. List of Members. Extracts from the Articles and Bye-Laws. 8vo. 1888	The Society
Society of Arts—	
Journal. (Current numbers). 1888 Report of the Conference on Canals and Inland Navigation . . . 1888. 98 pp. Map. 8vo. 1888	„
Society for the Propagation of the Gospel in Foreign Parts. Report for 1887. Maps. 8vo.	„

Donations—Contd.

Donations.		By whom Presented.
(e) Societies, &c. (British)—*Contd.*		
Statistical and Social Inquiry Society of Ireland. Journal. No. 4. Vol. ix. 1888. (Contents): Homestead Laws: *C. F. Bastable.* The Drought of 1887 and its effects on Irish Agriculture: *R. M. Barrington.* The Story of the North American Fisheries: *T. Connolly.* The Present position of the National Finances: *C. Eason.* Sliding Scales for Rent: *M. O'Brien.* Decimal Money: *R. R. Cherry.* Emigration and Immigration: *C. F. Bastable.* On Swiss Land Banks: *M. O'Brien.*		The Society
Surveyors' Institution. Transactions. Vol. xx, part 13. 1888		The Institution
(f) Periodicals, &c. (British).*		
Athenæum, The	Current numbers	The Editor
Bankers' Magazine (London), The	"	"
Building Societies and Land Companies' Gazette, The	"	"
Commercial World, The	"	"
Economist, The	"	"
Fireman, The	"	"
Insurance Post, The	"	"
" Record, The	"	"
Investors' Monthly Manual, The	"	"
Iron and Coal Trades' Review, The	"	"
Machinery Market, The	"	"
Nature	"	"
Policy-Holder Journal, The	"	"
Review, The	"	"
Sanitary Record, The	"	"
Scientific News	"	"
Shipping World, The	"	"
Statist, The	"	"

Purchases.

Authors—

Bäuerliche Zustande in Deutschland. 1883.
Buxton (S.). Finance and Politics. 2 vols. 1888.
Ingram (J. K.). History of Political Economy. 1888.
Leroy-Beaulieu (P.). Précis d'Economie Politique. 1888.
Molinari (G. De). La Morale Economique. 1888.
Sidgwick (H.). Principles of Political Economy. 1887.

Parliamentary Papers—

For Session 1887—

Corn Averages. Total Quantities of Wheat, Barley, and Oats returned for the "Gazette" Average Prices, &c. (108.)
Colonial Possessions. Papers relating to, for 1884-86. [C-5071.]
Destitute Aliens. Laws of Foreign Countries respecting Admission of. [C-5168.]
Emigration and Immigration. Statistical Tables relating to, for 1886. (32.)

---

* Foreign and Colonial Periodicals will be found under the various countries or possessions in which they are issued.

Purchases—Contd.

Parliamentary Papers—*Contd.*

For Session 1887—*Contd.*

- Friendly Societies. Part C of the Report of the Chief Registrar for 1886. (310-II.)
- Price of Wheat in France, Belgium, and Prussia in 1834, 1845, 1855, and 1885, &c. (247.)
- Public Expenditure. Return of (Exchequer Issues) Charges on Taxes. 1857-58 to 1886-87. (237.)
- Railways in India. Report for 1886-87 on. [C-5122.]
- Sea Fisheries of the United Kingdom. Statistical Tables relating to. (36.)
- Suez Canal. Returns of Shipping and Tonnage, 1884-86. [C-5000.]
- Wheat and Flour Imports for the twenty years 1866-86. (290.)

For Session 1888—

- Agricultural Adviser. First Report of the. [C-5275.]
- Charity Commission. Thirty-fifth Report, with Appendices. [C-5347.]
- Cyprus. Report of the High Commissioner for 1887. [C-5251.]
- Emigration and Immigration. Statistical Tables relating to, in 1887. (2.)
- Ecclesiastical Commission. Fortieth Report, with Appendix. [C-5330.]
- Elberfeld Poor Law System. Reports on, and German Workmen's Colonies. [C-5341.]
- East India (Home Accounts), 1886-87 and 1887-88. (167.)
- Education (Science and Art Department). Thirty-fifth Report. [C-5279.]
- Emigration (Colonies). Report on the Emigrants' Information Office for 1887-88. [C-5391.]
- Factories and Workshops. Report of Chief Inspector for 1887. [C-5328.]
- Foreign Taxes on Carriages. [C-5320.]
- Foreign Trade. Statistical Tables relating to Progress of. [C-5297.]
- Gold and Silver Commission. Second Report. [C-5248.]
- Local Taxation Returns for England and Wales. Parts 1 and 2. (96) and (96-I).
- Labour Statistics. Wages in Belgium. [C-5269.]
- Life Assurance Companies. Accounts and Actuarial Reports for 1887. (37.)
- Meteorological Council. Report of the, for 1887. [C-5280.]
- Price of Bread in France. Reports from Consuls on. [C-5258.]
- Railway Rates (United States), with First Annual Report of the Interstate Commerce Commission. [C-5339.]
- Railway Accidents. Returns of, for 1887. [C-5360.]
- Recent Changes in the Prices of Exports and Imports. Report on. [C-5386.]

Periodicals—

- American Almanac for 1888.
- Annual Register for 1887.
- ,, Statistician for 1888.
- Annuaire de l'Economie Politique pour 1887.
- Clergy List for 1888.
- Directory of Directors for 1888.
- Government Year Book for 1888.
- Hazell's Annual Cyclopædia for 1888.
- Howe's Directory of Metropolitan Charities for 1888.
- Kelly's Handbook to the Titled, Landed, and Official Classes for 1888.
- ,, London Suburban Directory for 1888.
- May's Press Guide for 1888.
- Mitchell's Newspaper Press Directory for 1888.
- Medical Directory for 1888.
- Routledge's Almanack for 1888.
- Sell's Directory of the World's Press for 1888.
- Shelley's Complete Press Directory for 1888.
- Statesman's Year Book for 1888.
- Times Register of Events in 1887.
- Year Book of Scientific and Learned Societies for 1888.
- Times, The, for 1845, 1846, and 1847, and various odd numbers.

Vol. LI.] [Part IV.

JOURNAL

OF THE ROYAL STATISTICAL SOCIETY,

DECEMBER, 1888.

The INAUGURAL ADDRESS *of* DR. T. GRAHAM BALFOUR, F.R.S., &c., *Honorary Physician to Her Majesty the Queen*, PRESIDENT *of the* ROYAL STATISTICAL SOCIETY. DELIVERED *20th November*, 1888.

ON taking the chair for the first time as your President, it is my pleasing duty to return you my sincere thanks for the honour you have done me in electing me to that post. I feel it indeed a great honour that you have thought me worthy to be enrolled in the same list with the eminent and distinguished Fellows who have been Presidents of the Society since its foundation, but I appreciate it still more highly as an expression, on the part of those very competent to judge, of their approbation of the manner in which, during a somewhat long career, I have endeavoured to promote the search after truth by those means which it has been the special object of this Society to cultivate.

It is gratifying to me to be able on the present occasion to congratulate you on the continued prosperity and progress of the Society. During the last session we added 147 names to our list of Fellows, and for the first time our number exceeded 1,000; but while we have reason to be satisfied with the increase of our numbers, we have also cause for regret in the reduction which unavoidably occurs from year to year by deaths and resignations, amounting during the past twelve months to 13 and 28 respectively. Since our annual general meeting in June we have lost 5 Fellows, and among them are included two of our old members, Mr. Frederick Purdy and the Rev. E. Wyatt-Edgell, who, in their day, had done very good work for the Society.

Mr. Purdy was elected a Fellow in 1837; he served on the Council from 1860 till 1882; was Honorary Secretary from 1863 to 1873, and Editor of the *Journal* during the same period; and was Vice-President in 1877, and again in 1879. Besides several articles which he contributed to the *Journal*, he read five papers to the Society: one in 1860, on the Statistics of the English Poor Rate before and after the passing of the Poor Law Amendment Act; two, in 1861 and 1862, on the Earnings of Agricultural Labourers in England and Wales, and in Scotland and Ireland; one in 1863, on the Expenditure of the United Kingdom for Colonial Purposes; and one in 1871, on the Preparation and Printing of Parliamentary Statistics. Mr. Purdy was employed on the Poor Law and Local Government Boards for the long period of forty-nine years, and, as pointed out by Dr. Mouat in his History of the Statistical Society, to him we are indebted for the introduction of a sound system of the statistics of pauperism. During the cotton famine of 1862-64, he forwarded to the Government, week by week, a statement of the number of paupers relieved in each of the Poor Law Unions affected by the famine—a work involving an immense amount of labour and requiring indomitable perseverance for its execution. Mr. Purdy was an indefatigable worker, and was noted for care in the collection of his figures and caution in drawing deductions from them. The reports of the Local Government Board are monuments of his industry, accuracy, and intelligence.

The Rev. E. Wyatt-Edgell was elected a Fellow in 1838, and served on the Council from 1848 to 1856, and again in 1862. He read four papers to the Society: one in 1839, on the Moral Statistics of the Parishes of St. James, St. George, and St. Anne, Westminster; in 1849, on the Plan Adopted for taking the Census of 1841, with Suggestions for its Improvement; in 1850, a Proposal for Preserving, and Making a General Index of the Parish Registers anterior to 1837; and in 1851, Statistics of Places of Worship in England and Wales.

There are now on the roll of the Society 1,019 Fellows, and I trust you will all endeavour to increase that number by inducing your friends to join and to assist in our labours in the collection and systematic arrangement of facts represented in a numerical form. I would also desire to impress upon you, and especially upon the younger Fellows, the importance of forwarding the objects of the Society not merely by attending its meetings and taking part in the discussions, but also by furnishing papers containing carefully collected numerical data and well considered deductions from them. One of the difficulties with which the Council has to deal is that of procuring an adequate supply of papers worthy of the reputation of the Society, and in appealing to you to assist it in this matter, I feel that I am pointing out a most desirable method of promoting the objects for which we are incorporated.

A difficulty experienced by your President, at least in my case it has been so, is to select a subject likely to prove interesting on which to address you at the opening of the session. It has appeared to me that I might with advantage bring to your notice some of the errors which may arise in the use of figures under certain conditions, and some of the benefits to be derived from statistics when correctly and carefully employed. This I propose to do by means of illustrations drawn chiefly from that branch of vital statistics in which my labours were carried on for a very long period, and with which therefore I may claim to be familiar.

The first point which I desire to bring before you is the necessity, in making a comparison of two series of observations, believed to be alike, but separated from each other by a greater or less period of time, for a careful examination to ascertain that the conditions were similar at the two periods, or in what respects they have been changed.

In a recently published work entitled "Prosperity or Pau-"perism," edited by the Earl of Meath, a paper by his lordship on the Health and Physique of our City Populations, has been reprinted from the "Nineteenth Century" of July, 1881. In that paper we find the remark: "It is well that all matters should be " brought to the test of truth, the question of physique not less " than others of apparently greater importance, and indeed this is " a question not unworthy of serious consideration. Let it not be " thought that it is a matter of indifference whether the average " breadth of chest or height of Englishmen varies an inch or so " one way or the other. National physique depends upon national " health, and health is as necessary to the happiness and prosperity " of a nation as it is to an individual." Agreeing entirely with this opinion, I carefully looked for any statistical evidence on the deterioration of physique alleged, in the work referred to, to be in progress among the mass of the population, but, with the exception of one paper, I could find nothing possessing that character. A great deal is said as to the increase, of late years, of the town as compared with the rural population, and the injurious consequences which must follow upon the crowding together of masses within limited areas, unless steps are taken to counteract them. Lord Meath goes on to say: "Now it is a well known and universally " recognised axiom of hygienic science that, other things being " equal, the health of the population is in the inverse ratio to its " density; in other words, that the more the people are con-" gregated together the more unhealthy do they become. This " being the case, it will be readily seen that unless steps are taken " to counteract the operation of this natural law, the inhabitants " of our towns must degenerate in health, which is as much as to " say that this is the destined fate of two-thirds of our population; " for at this moment there are in Great Britain two men living " in towns for every one living in the country." But no evidence is adduced to show to what extent this deteriorating condition has increased, or in what degree, if any, it has been counteracted by the various measures which have been adopted to improve the dwellings of the working classes, to diminish the over crowding of their rooms, and to increase the open spaces in the form of parks, gardens, play grounds, and gymnasia. The very important condition however of "other things being equal" appears to have been greatly overlooked in the discussion of the subject. The marked reduction in the death-rate of the population affords presumptive proof of the operation of certain measures beneficially affecting the public health, and it seems a legitimate inference that they must also tend to the production of improved physical development. It may at least be taken as negative evidence that the increase in the proportion of town residents has not necessarily been productive of the anticipated degeneration in health.

It has already been noted that, with one exception, none of the papers contain any statistical evidence bearing on the question of physical degeneration. That exception is an article reprinted from the "Scotsman" of 21st September, 1887, headed, "Are we "decaying?" in which it is stated, on the authority of the Director-General of the Army Medical Department, that "In the "period from 1860-64 inclusive, no fewer than 32,324 examina- "tions of recruits were made by army surgeons. The number of "men required averaged 6,465, this being a small one, and the fact "therefore telling in favour of rigid tests being applied to ensure "the efficiency of the material offered in the shape of fighting men. "The rejections from all causes numbered 371·67 per 1,000. The "next period, from 1882-86, presents us with 132,563 men who "offered themselves for enlistment. The rejections here amounted "to 415·58 per 1,000. The increase in the rejections was therefore "of a most marked character. Sir Thomas Crawford can explain "it in one way only: 'The masses from whom the army recruits "are chiefly taken, he tells us, are of an inferior physique to what "they were twenty-five years ago.' That is the plain unvarnished "truth, and as such it is by no means of a palatable kind to those "who regard the national welfare as a thing to be conserved and "prized."

These results seemed to me so unsatisfactory, and so different from what might have been expected, that I determined to make a careful examination of the data upon which they were founded, and to trace, if possible, the classes of disqualification in which the increase was chiefly manifested. This inquiry has satisfied me that a large proportion, at least, of the striking excess of rejections has been due not to an increase in the disabilities among the recruits examined, but to improvements introduced into the returns in 1864, by which they were made much more complete than in the preceding four years, and to changes in 1879 and 1880 in the system of examination. To permit of a just estimate being formed, by those unacquainted with the working of the recruiting service, of the influence of these circumstances upon the statistical returns, it is necessary to give a brief sketch of the manner in which it was formerly conducted, and of some of the changes which have of late years been introduced. Half a century ago recruits for the army were obtained in two different ways: by enlistment at the head-quarters or depôt companies of the regiment in which they wished to serve, or, by recruiting parties sent to different places for the purpose of raising men. By the first method, the recruit, having been examined by the medical officer of the regiment and approved by the commanding officer, was at once taken on the strength. By the second, the United Kingdom was divided into a number of recruiting districts, each under the command of an inspecting field officer, with an adjutant, a paymaster, and a staff surgeon under him. Recruiting parties were sent from regiments, by order of the adjutant-general, and were distributed by the inspecting field officer in such towns and villages within his district as he deemed advisable. When a recruit was enlisted at the head-quarters of the district, he was examined prior to attestation by the staff surgeon, who decided as to his physical fitness for military service. If enlisted at any of the out stations, the recruit was taken to the nearest military medical officer, if within a convenient distance, or, if not, he was examined by a civilian medical practitioner sanctioned by the War Office to be employed for that duty. If deemed fit he was attested, and subsequently taken to the district head-quarters, where he was re-examined by the staff surgeon. If found unfit by him the recruit was discharged with a protecting certificate; if fit, he was sent to his regiment. At one time recruits, on joining the corps, were subjected to another examination by the regimental medical officer, and if objected to by him were brought before a medical board for its decision as to their fitness; but this was found to be attended with many disadvantages, and in consequence the decision of the staff surgeon was made final.

Prior to 1860 the only returns of recruits received at the army medical board were those forwarded by the staff surgeons of districts, and in them the numbers inspected primarily and secondarily were combined, while there was no return, from the out stations, of the recruits primarily inspected at them. This introduced a source of error into the returns, for in districts having a large number of out stations, and therefore a high proportion of secondary examinations, the rejections would necessarily appear to be considerably less than in those where, from the small number of out stations, primary examinations greatly preponderated. From 1860 till 1864, in addition to those of the staff surgeons of the districts, returns were received from all the medical officers in charge of regiments and depôts, but there still was wanting a statement of the recruits examined by civilian practitioners, and the omission of the primary examination of these men while the secondary was included, tended to reduce the proportion found unfit below its accurate amount. In 1864 arrangements were made by which returns were obtained of the recruits examined by civilians, and from that period we are enabled to state accurately the total numbers examined for the army, and the proportion rejected on medical grounds. But before proceeding to an investigation of the statistics thus obtained, it is necessary to point out some changes in the regulations which have exercised a marked influence upon the results as published in the army medical reports.

On the 1st January, 1879, the following general order was issued by the field marshal commanding-in-chief: "The approving "field officer and recruiting officer will no longer be held responsible for the correctness of this [the chest] measurement, which "will now form part of the medical examination."

Until 1880 the recruiting officer was held responsible for the height and the apparent age of the recruit, and the medical officer was not required to test these in any way, if he thought him otherwise physically fit for military service. In the army circular of June, 1880, the following regulation was promulgated by the Secretary of State for War: "The approving medical officer is "responsible for the measurement of recruits as regards standard "of height, chest, and weight, as well as for the apparent age "being in accordance with the schedule given in General Orders "from time to time." These transfers to the medical officer of a duty previously discharged by the recruiting officer, introduced a new element into the medical returns which must obviously be omitted in any comparison of the results of the examinations with those of previous periods. This remark however does not apply to the instruction respecting weight, which merely substituted a well defined standard for the previously vague statements of "muscular tenuity and debility." But if the cases of deficient height, under-chest measurement, and apparently incorrectly stated age are to be omitted from the rejections, they must also be deducted from the number examined, as there is no evidence on the subject of their physical fitness or unfitness. The same remark applies to men rejected for "marks of punishment, or "letters D and B C," which must be regarded as evidence of a moral and not a physical disability; the fact indeed of their having been previously in the service affords presumptive evidence of their fitness. There is yet one more point to be noticed: in the returns for 1882 and the subsequent years, a column has been inserted showing the number "unfit within first three months of "service." But these clearly ought not to be included among the rejected recruits. They have all been examined and passed as fit for service; the disability for which they were ultimately discharged may have been contracted subsequently to enlistment or may have been overlooked at the time of the examination, but it is obvious that the men cannot be included in the classes of both passed and rejected.

In applying to the question of deterioration of the health of the people the evidence afforded by the recruiting returns, I propose first to examine those for the period from 1864 to 1885 inclusive, as being the only ones which include all the examinations of men enlisted in each year, but deducting therefrom those rejected for deficient height, under-chest measurement, apparently incorrect age, and for marks of D and B C. On this principle the table appended to this Address has been drawn up from the published reports of the army medical department.

If we divide the numbers thus obtained into four groups, we obtain the following results. In the six years 1864-69 the proportion rejected was 398·2 per 1,000; in the five years 1870-74 it was 314·6; in the five years 1875-79 it was 289·2; and in the six years 1880-85 it was 299·5. Thus in the last period there was a reduction of one-fourth compared with the first period, and the proportion was almost identical with the average of the intervening ten years. It must be obvious therefore that the statistics of recruiting for the army do not bear out the inference "that the lower classes "from whom the recruits for the army are chiefly taken are of an "inferior physique now to what they were twenty-five years ago." But we must be careful not to draw from these figures the opposite deduction, that there has been a marked improvement in the physique of that class. We should rather ask the question: Do the statistics furnished by the medical examination of the recruits give us a correct standard by which to judge of the physique of the civil population? And this question I must answer in the negative. There are so many circumstances affecting the conditions under which the men are enlisted, so many, shall I call them arbitrary, certainly they are varying, regulations as regards the height, weight, chest measurement, &c., the numbers required to complete the establishment of the army, and the state of the labour market, that it is impossible to arrange the results in a form which complies with the condition of "other things being "equal." Do not suppose that I think the recruiting statistics to be of little or no importance; they are of great value and furnish much useful information. But I have brought the subject before you this evening as a very striking example of the necessity of attending to the identity of the conditions before drawing deductions from a comparison of the results of two different periods, and of the erroneous conclusions which may be arrived at from overlooking important differences.

In the extract from "Prosperity or Pauperism" which I have read to you, reference is made to the height and chest measurement as measures of physical development. There are serious obstacles to the application of these data as collected in the recruiting returns. The minimum height of the recruits to be enlisted is frequently varied in consequence of the larger or smaller number required to complete the establishment. I remember that in 1838, when an increase to the strength of the army was made in consequence of the unsatisfactory appearance of our political relations with the United States, it was estimated that by the reduction of an inch in the standard, the minimum height at that time being 5 ft. 6 in., 10,000 men could be raised without much difficulty, and I believe this expectation was realised. But if the minimum standard during one period, or even a portion of one period, be different from that of another, it must of course vitiate any deductions from the relative proportions at each height during the two periods. Applying this test to the two quinquennial periods 1864-68 and 1881-85, I find that in the former the minimum was at one time (in 1864) 5 ft. 6 in. for the infantry, that branch of the service for which the largest number of men is required. Any comparison therefore with a period in which the standard was lower would obviously lead to erroneous conclusions. But it appears to me that if we confine the comparison to the numbers above that minimum a fair inference may be drawn from the proportion of men at the different heights from 5 ft. 6 in. upwards. On this principle I have prepared a table showing the proportion at each height per 1,000 examined, and the following are the results:—

Proportion per 1,000 Examined of Recruits of 5 ft 6 in. and upwards.

	5 ft. 6 in.	5 ft. 7 in.	5 ft. 8 in.	5 ft. 9 in.	5 ft. 10 in.	5 ft. 11 in.	6 ft. and upwards.
1864–68	383·2	278·0	168·7	90·4	44·0	21·3	14·4
'81–85	373·7	274·6	175·4	96·9	44·2	21·1	14·1

If then we are entitled to consider this a fair test, there has been an improvement in the physique of the recruits during the later period. Unfortunately we cannot apply a similar rectification to the returns showing the weight of the men, as there was no minimum established during the earlier period. It is obvious also that changes in the standard of height must necessarily affect the results with regard to weight, and as the weights are grouped in the returns according to the ages of the recruits, but without any reference to their heights, it is impossible to make any correction on account of variations in the authorised standard of the latter.

The recruiting returns may furnish another instance of the necessity for ascertaining any changes in the army regulations before drawing conclusions from the results furnished for different periods. I have already shown why marks of corporal punishment, or the letters D and B C should be excluded from the list of physical disabilities for which recruits have been rejected, but there is another point concerning them which deserves notice. In 1864 the proportion of recruits rejected on this account was 3·61 per 1,000 inspected; in the five years 1865-69 it averaged 2·28; in 1870-74, 1·17; in 1875-79, 0·44; in 1880-85, 0·16; and in 1886 there were only 2 men rejected on this ground, or in the ratio of 3 in 100,000 examined. At first sight this might be looked on as an indication of improvement in the class of men who present themselves for enlistment, but on a further examination a less gratifying explanation is to be found in the change of the law respecting the punishments indicated by these letters. By the Mutiny Act of 1868 the infliction of corporal punishment was abolished, "except "on active service or on board a ship not in commission;" and in 1871, marking deserters with the letter D, and men discharged the service as bad characters by sentence of a court martial with the letters B C was abolished. The practical result has been that rejections on these grounds have disappeared from the returns, although there is unfortunately good reason to believe that the offences for which the culprits were marked still exist, and probably in even greater force than before, as the chances of detection on attempted re-enlistment have been so materially diminished. By this legislation the army has lost, in the greater facility afforded to men of this class to re-enlist, and the public have doubtless paid pretty severely in the way of men repeatedly deserting and enlisting in other corps, owing to the means of detection having been abolished. It is quite worthy of inquiry, from a financial point of view, whether some means of identification of such characters could not be established which would prevent, or at least greatly lessen, the frauds which there is too good reason to believe are now perpetrated.

As the subject is one of great importance I may be excused for bringing to your notice another instance of the erroneous conclusions which may be drawn owing to the neglect of the principle of *cæteris paribus*. In the "Sanitary Record" of 15th September a report is given of the address to the Association of Public Sanitary Inspectors at Brighton by our highly esteemed veteran Fellow, Mr. Edwin Chadwick, C.B., from which the following is an extract: "Let me exemplify the power of the progress of "sanitation as displayed in the military services. A quarter of a "century ago the death-rate in the Guards was 20 per 1,000. It is "now 6½ per 1,000, and, as I could show, it is yet much too high. "The death-rate in the home army was 17 per 1,000; it is now "about 8 per 1,000. But Germany beats us with a death-rate of "5 to 6 in 1,000." In attributing these marked reductions in the death-rate to improved sanitation, Mr. Chadwick has omitted to take into consideration some great changes in the organisation and working of the army which must have exercised a material influence in their production. Before noticing these, however, it is necessary to point out an anachronism which has a marked bearing on the question. The death-rates quoted of the Guards and of the army at home are not those of a quarter of a century ago, but apparently the average, taken from the report of Lord Herbert's Commission, of the fifteen years 1839-53, or forty years ago. I notice this in no captious spirit, but because some of the important changes to which I have alluded had not come into operation then, though they had begun to exercise an influence at the later period. In 1860-64 the death-rate of the Guards was only 9·53, and that of the army at home 9·38 per 1,000.

The most important, probably, of the changes to which I have alluded was the adoption, or perhaps it might be more correctly termed the reintroduction in 1849, by the Secretary at War, Mr. Fox Maule, afterwards Earl of Dalhousie, of the system of enlistment for limited periods instead of for life. A practical result of this measure was a reduction in the age of the men serving, many taking their discharge at the end of the first period, twelve years in cavalry or artillery and ten in infantry, and a considerable number being refused re-enlistment for a second term. This effect, however, did not begin to show itself till after 1859. The reduction in the ages of the men serving was still further increased by the operation of the Army Enlistment Act of 1870, under which men were transferred from the regular army to the 1st class army reserve after short periods of service. During the last five years the number so transferred has averaged upwards of 11,600 annually, of whom only about 1¼ per cent. had served upwards of ten years. The practical result of this has been that while during the period 1837-46 the proportion of men under 30 years of age was 714 and over that age 286 per 1,000 serving at home, in 1886 the proportion was 823 under, and 177 over 30. This difference in the age-distribution, it is hardly necessary to remark, must have exerted some influence on the death-rate of the two periods.

Another change must be noticed, although its influence on the home death-rate was only indirect, the reduction of the period of continuous service in the tropics. In the West Indies this was reduced from ten or twelve to three years, and in India from twenty to ten years. Fifty years ago, and I may observe in passing that this is the jubilee year of the publication of the first volume of "Army Vital Statistics," the doctrine of acclimatisation was an article of belief among the military authorities, and indeed was not confined to them. It was supposed that by continued residence in an unhealthy climate an immunity from its diseases was acquired, and that the death-rate diminished progressively with length of residence. In accordance with this view it was deemed advantageous to keep regiments as long as possible in our tropical possessions. In the first volume of the statistical reports on the health of the army we examined carefully the data bearing on this question, as indicated by the death-rate at different ages and the mortality in the successive years of service of regiments in the West Indies. The results showed satisfactorily the fallacy of the theory, the death-rate increasing much more rapidly with the advance of age than among troops at home. As a result of this inquiry Lord Howick, the present Earl Grey, then Secretary at War, introduced the rotation system of reliefs by which regiments were retained only three years continuously in the West Indies. It was in accordance with this view also that Mr. Fox Maule brought in the Limited Enlistment Act, which had previously been opposed on the ground of the advantage derived by the soldier from becoming acclimatised. We may claim for statistics the merit of having been the means of abolishing the discreditable, though legal, system under which lads, still infants in the eye of the law, were permitted to contract with Government for a life service, from which they had no power to obtain a release except through the indulgence of the authorities. The reduction in the length of continuous tropical service has, no doubt, had an influence on the death-rate of the home force by reducing the number of men whom it has been found necessary to send home from the service companies to the depôt for change of climate, and often with permanently impaired health. That the influence of this transfer in increasing the home death-rate is no merely theoretical impression is shown by the fact that, on the average of the last five years, the death-rate of the depôts has been 9·07 per 1,000, while that of the rest of the army at home has been only 6·21 per 1,000, and the excess has been most marked among the men of 30 years of age and upwards, among whom these invalids would chiefly be included.

I trust you will not for a moment suppose that in these remarks

I desire to depreciate the value of sanitary measures in the army. I claim to have been one of the earliest reformers in that direction, at a time when such measures were far from popular, and when I was accused by military officers of being desirous of "coddling" the men, and through a somewhat long career in the public service, I have never lost an opportunity of promoting sanitation to the utmost of my power. But I desire to see all such questions submitted to the inexorable test of figures. I believe that no more serious injury can be done in the way of retarding the progress of sanitary science and the practical application of the measures founded on it, than by exaggerated statements of the results which have been obtained or estimates of those which may reasonably be anticipated from their adoption. The benefits to be derived from improved sanitation are very great and deserve careful study; let it be our part, in the true spirit of statisticians, and in accordance with those principles on which our science is founded, to watch over the careful and accurate record of its results with a view to obtain a trustworthy standard by which we may fairly estimate the advantages that may reasonably be anticipated from it under specified conditions.

As regards the comparison of the mortality of the German army with that portion of our army serving in the United Kingdom, in the extract which I have already read to you, I will merely observe that such a comparison cannot be made accurately without a knowledge of the relative age distribution in the two armies. So far as I can estimate this from imperfect data, in the German army the proportion of men above 25 does not appear to exceed 15 per cent., while in our army at home, according to the latest return published by the adjutant-general, it is 29 per cent., a difference which would account for any slight excess in the British death-rate.

The statements in Mr. Chadwick's address respecting the comparative mortality of the two armies led to a correspondence in the "Times," which brought prominently to notice another serious error, which, I regret to say, is very often committed by persons imperfectly acquainted with the use of figures. I mean the practice of basing their deductions on calculations made on ratios of unequal quantities, instead of upon the actual numbers from which the ratios were derived. By a very curious process one correspondent arrived at the conclusion that the death-rate of the British soldier on foreign service was only 4·4 per 1,000 of the strength, while another, who pointed out this error, fell into one not quite so glaring, but in principle equally erroneous, by making his calculations in the manner I have stated. I am sure it is unnecessary in addressing the Fellows of this Society to point out the impossibility of obtaining anything approaching accuracy by such a process. And here I may note, with regret, that in many of the published statistical documents, both of our own and of foreign Governments, the ratios are frequently stated without the numbers being given on which they have been calculated. This of course prevents, in many instances, a rearrangement of the data which may be necessary for the purpose of making an accurate comparison, and also deprives us of the information requisite to form an estimate of the value of the deductions, which so often depends upon the amplitude of the observations on which they have been based.

Before quitting the subject of the erroneous conclusions which may be drawn from a comparison of two periods without regard to the important principle of similarity of the conditions, I would call your attention to the report of a select committee of the House of Commons during the last session of Parliament. In the third report of the Select Committee on Army Estimates, the chairman of which, it may be remarked, was an ex-chancellor of exchequer, it is stated that, "there has been an enormous increase of charge "for the medical service of the army since the year 1872. In that "year there was provided under vote 4, 247,744*l.* as against "304,900*l.* in this year... The number of men in the army provided "for under vote 1 in 1872 was 133,649 as against 149,667 in this "year... The increase under vote 4 is mainly accounted for by "improved rates of pay, and by a large addition to the numbers of "the medical staff corps." But a careful comparison of the estimates for the two years shows that a considerable portion of this excess of 57,000*l.*, in the amount of the vote, was not really an increase of expenditure, but a transfer of charges from other votes to vote 4, and another portion was a result of the change in the hospital system under which the subordinate staff is furnished by the medical staff corps instead of, as formerly, by the regiments. So far as I can judge, though I say it with great diffidence, as the army estimates are very difficult to understand, the amount which should be accounted for in this way would be about 36,000*l.*, thus reducing the actual increase to about 21,000*l.* I trust it may be clearly understood that I do not call in question the propriety of charging these items under vote 4, I merely point them out as being misleading in a comparison of the expenditure of the two periods. The change in the method of stating the charges against the several departments appears to be a marked improvement upon the old system, as showing somewhat more nearly the actual cost of each, but in making comparisons with previous periods the effect of changes of organisation, or of system of accounting, should be clearly stated to prevent, as in this instance, erroneous inferences as to increased or diminished expenditure.

I have hitherto spoken only of errors in the method of conducting statistical inquiries, I would now bring to your notice a valuable practical application of vital statistics to an important question of finance. While employed in the preparation of the earlier volumes of the "Statistical Reports on the Sickness, Mortality, and "Invaliding of the Army," the late Sir A. M. Tulloch and I were instructed by Lord Howick, then Secretary at War, to extend our inquiries to the duration of life of the soldier after his discharge from the army. For this purpose we were authorised to make the necessary extracts from the books in the secretary's office at Chelsea, and we thus traced the history of 34,294 men. The results of our investigation, as regards the death-rate, will be found in the volume of Statistical Reports presented to Parliament in 1853. In the course of our work we were much struck with the longevity of the pensioners, and especially of those who enjoyed high rates of pension. This led to inquiries being made into some of the suspicious cases, which left little doubt on our minds as to the existence of fraudulent personation. We were assured, by the authorities of Chelsea, that the system of checks in operation was such that fraudulent personation to any extent was impossible, and that if a case occasionally, though rarely, occurred, it would at once be detected and punished. Notwithstanding these assurances, however, Lord Howick, on the evidence submitted to him by us, took steps to have an identification of all the pensioners in the United Kingdom carried out, which was done, and I am bound to say very efficiently done, by a staff of clerks from the secretary's office at Chelsea. The results of the identification were very remarkable: 60 cases of fraud were detected, and at the next quarterly payment which took place after the inspection, about 200 pensioners failed to appear, whose deaths could not be traced as having taken place in the towns where they were paid, nor could any information regarding them be obtained either then or subsequently. It is a legitimate inference therefore, that a large proportion, if not all of them, were non-existent when the amount due at the previous quarter was paid. But, in addition to these cases, one of the clerks of the Excise or Customs, by whom the payments to the pensioners were at that time made, was convicted of drawing the pensions of several dead men, and one of the clerks in the office at Chelsea absconded, regarding whom there was evidence to show that he had for some years been adding materially to his salary by a similar proceeding. As a result of these inquiries the system of payment by military officers, with a staff of non-commissioned officers, was introduced, with such regulations as to supervision and identification as to render personification, if not impossible, at least very difficult and almost certain of early detection. Some tables prepared under the direction of Colonel Tulloch, who had been appointed head of the new department of staff officers of pensioners, showing the death-rate of the pensioners during the eight years 1845-52, compared with the results for a similar period before the introduction of the new system, fully bore out the conclusions at which we had arrived, on statistical grounds, as to the concealment of a number of deaths, and the frauds connected therewith. The mortality during the later period was one-fourth, or, making an allowance for exceptional circumstances, at least one-sixth higher than in the earlier. I am not aware of the publication of any information as to the mortality, at different ages, of the military pensioners at a later date than that just referred to, but it seems to me very desirable that such a document should be periodically prepared and published. This appears the more necessary as, in the recent changes in the army organisation, important alterations have been introduced into the system under which the payments are made. Instead of this being done through a staff officer, or one of his serjeants, who would have a personal knowledge of the man, it is to be effected by means of post office "army money orders." Some precautions have been introduced into the regulations, so far as I have been able to ascertain them, with a view to the prevention of personation, but, with the knowledge of the glaring abuses which existed under the former system of making the payments, and the utter insufficiency of declarations made before a magistrate or a clergyman to prevent or detect such frauds, I confess that I feel some apprehension as to the possible results of this relaxation of personal superintendence. I am the more disposed to this view because I think the military authorities have lost sight of the causes which led to the appointment of staff officers of pensioners and the organisation of the system of identification, payment, and control by military officers. This opinion is strengthened by a statement made by the Adjutant-General in a work entitled "The "Reign of Queen Victoria; a Survey of Fifty Years of Progress. "Edited by T. Humphry Ward, M.A." In the article on the army, written by Lord Wolseley, he says: "The enrolled pensioner force "only came into existence in 1842, although all pensioners had "previously been deemed liable to military service when required. "This new force was created more as an aid to the civil power "than for any military reason." This, however, was not the cause of the organisation of the pensioners in districts under military superintendence; it was, as I have stated, to put an end to a widespread system of fraudulent personation, and the enrolment of the more efficient of the men was introduced merely with a view to utilise their services on any emergency. It is sincerely to be hoped

Google

that the endeavour to economise by the reduction of the staff officers, may not be productive of loss in the form of the payment of dead men's pensions.

In the report from which I have been quoting, we stated, "the "full extent of the loss incurred by the public in this way must "always remain a matter of doubt, but enough has been elicited "in the course of the present inquiry to show the necessity for "not placing too great reliance on the checks hitherto established "in the case of government annuities, more particularly at a time "when those of small amount are so frequently purchased among "the lower classes, by persons comparatively little known, and in "the payment of whom fraud might, it is presumed, be perpetrated "with the same facility as in the instances of the pensioners "already referred to." That this warning of the necessity for a more efficient system of checks and careful supervision of the pension lists was not altogether unneeded, may, I think, be inferred from the fact that in the "Statements and Abstracts of Reports "deposited with the Board of Trade under the Life Assurance "Companies Act, 1870, for the year ended 31st December, 1875," one office returned 31,756*l.* 15*s.*, and another 25,949*l.* 2*s.* 11*d.*, under the head of "Repayment to Commissioners of National "Debt for amount of annuities on selected lives received in error, "and costs," making a total of 57,705*l.* which had been paid in error by the government. I have been unable to ascertain the circumstances under which these payments were made, but surely some additional check is required to prevent the recurrence of such an error, for we can have no positive assurance that it would, as in these two instances, be detected and the amount refunded. But if the caution given in our report was necessary at that time, it appears to be much more needed now, in view of the great development of the system of annuities contracted for by Her Majesty's Postmaster-General under the provisions of various Acts of Parliament. From a return presented to Parliament during the last session, it appears that from the 17th April, 1865, to the 31st December, 1887, the number of contracts entered into by the Postmaster-General for immediate annuities was 16,448, and the amount of the annuities was 250,909*l.*, or an average of 15*l.* 5*s.*; and of these there were in existence on the 31st December, 1887, 9,996 contracts for annuities of 177,130*l.*, or an average of 17*l.* 14*s.* 5*d.* There have consequently lapsed between 1865 and 1888, 6,452 annuities, amounting to 73,779*l.*, or an average of 11*l.* 8*s.* 1½*d.* each. In the absence of all information regarding the ages of the annuitants, it is impossible to form any opinion as to the rate of mortality which has occurred, but with the experience of the frauds among the army pensioners, the fact that the decrease in the annuitants has been to a marked degree among those drawing rates below the average, would seem to point to the necessity for an inquiry into the death-rates at different ages. I presume that the books have been so kept that the requisite data could be taken out with a moderate amount of clerical labour, involving an expenditure which would be fully justified by the importance of the subject. But not only should this inquiry be made with reference to the past, provision should be made for its continuance from year to year, and the publication of the results. It is true this would not lead to the detection of an occasional instance of fraud, but it would bring to notice any such deviation as would arise from the existence of a system of fraudulent personation, and lead to careful measures of identification. So far as we know there is at present no sufficient check upon the recipients of annuities, pensions, and retired pay, while there is good evidence of its need, and I do not think it unreasonable to expect that the Government should furnish satisfactory proof that this important control is neither overlooked nor neglected. During the same period the Postmaster-General entered into contracts with 8,910 persons for sums payable at death, amounting to 681,015*l.*, or an average of 76*l.* 8*s.* 7*d.* each, and of these 5,859 were in existence on the 31st December, 1887, covering an amount of 447,309*l.*, or 76*l.* 6*s.* 11*d.* each. Consequently 3,051 have ceased, involving payment of 233,706*l.*, or 76*l.* 12*s.* on each contract. It will be observed that although the difference between the average of the total sums assured and the average of those which have lapsed is trifling, the latter is slightly higher, in marked contradistinction to the results obtained in the case of the annuities. It is of course impossible in the absence of details to draw any definite conclusion from these figures, but it may be admitted that they strengthen the case for a careful and searching inquiry into the question.

I fear I have already taken up too much of your time, and laid myself open to the imputation of having wearied you with dull figures. My only excuse is the importance which I attach to the subjects I have brought under your notice, and the hope I entertain that you may deem them worthy of your careful consideration, notwithstanding the inadequate manner in which they have been treated.

Table showing the Number of Recruits for the Army Medically Inspected in each Year from 1864 *to* 1885 *inclusive, and the Numbers Rejected; exclusive of those returned as "Under Height," "Under Chest Measurement," "Apparent Age not in accordance with General Order," "Marks of Punishment or of Letters D. or B.C.," and "Unfit within First Three Months of Service."*

Year.	Inspected.	Rejected for Physical Disabilities.	Ratio Rejected per 1,000 Inspected.	Year.	Inspected.	Rejected for Physical Disabilities.	Ratio Rejected per 1,000 Inspected.
1864	27,634	12,325	446·0	1875	25,862	6,646	257·0
'65	24,801	10,508	423·7	'76	41,781	11,391	272·6
'66	20,372	7,723	379·1	'77	43,784	12,818	292·8
'67	26,592	10,015	376·6	'78	43,845	13,069	297·4
'68	23,505	8,809	374·8	'79	39,640	12‘449	314·0
'69	17,711	6,622	373·7	'80	39,662	12,348	311·3
'70	38,343	12,870	335·7	'81	39,009	12,087	309·8
'71	36,152	11,954	330·7	'82	36,741	10,520	286·3
'72	28,366	8,969	312·7	'83	49,943	13,908	278·5
'73	24,875	7,539	303·1	'84	57,062	17,814	312·2
'74	30,541	8,455	276·8	'85	62,261	18,667	299·8

Summary.

Years.	Inspected.	Rejected.	Ratio per 1,000.
1864–69	140,615	56,002	398·2
'70–74	158,277	49,784	314·6
'75–79	194,912	56,373	289·2
'80–85	284,678	85,344	299·8
22 years........	778,482	247,503	317·9

PROCEEDINGS *on the* 20*th* NOVEMBER, 1888.

MR. ROBERT GIFFEN said it was his pleasing duty to ask the members to give a very cordial vote of thanks to Dr. Balfour for the excellent and most interesting address which he had delivered. He should like to say first of all that they had very great pleasure in welcoming Dr. Balfour amongst them as their President. As some of them knew, Dr. Balfour had a good deal to do with military statistics many years ago when they began to assume their present form. Dr. Balfour had told them something of the different branches of these statistics, and the investigations with which he was connected; but if it had not been for his modesty he might have said with regard to this and a great deal more to which he had not referred, "Quorum pars magna fui." Dr. Balfour had read to them at different times various interesting papers, and they knew him as having practically done a great deal to organise the excellent army statistics that they possessed. The army statistics to which he had referred, this being the jubilee of their publication, were in some respects a model of statistical arrangement. It was a great pleasure to the Society to be able to welcome Dr. Balfour as their President. With regard to the address they had just listened to, he was quite sure that it was unnecessary to say anything in praise of the treatment of the various topics which Dr. Balfour had brought before them. To some of those topics, however, he might be allowed to refer. First of all, although it was hardly a special matter of the address, it was very interesting to them as a Society, and it was only right that they should give expression to their satisfaction at the account which had been given them of their prosperity in respect of numbers. Of course the more their numbers increased the more their income increased, and the more satisfactory statistical work he hoped they would be able to do. He might take the opportunity of suggesting that before long it would be possible for the Society to use some of its means in promoting statistical investigation of a direct kind; if they had sufficient income there was some good work to be done in that way. Another topic which had been brought before them was one upon which something might be said by those who moved a vote of thanks upon that occasion, that was with reference to the deaths of the two gentlemen which he had mentioned as having taken place since the last meeting in June. Those especially who knew Mr. Purdy would be able to echo everything which Dr. Balfour had said with reference to him. Mr. Purdy, although he had not been for many years able to attend their meetings, in the days when he (Mr. Giffen) became connected with the Society was really a great man amongst them, one of their most hard-working statisticians; and did a great deal to promote the welfare of the Society. He had arrived at an age at which his life could not be expected to be prolonged, but they ought always to remember the work of those who had done so much good service as Mr. Purdy had done. Coming to the special topics of the address which Dr. Balfour had given, they were specially indebted to him for bringing forward the points connected with a special function of the Society, that of criticising methods of statistics. As they all knew, there was nothing more common amongst public men, nothing more common amongst party politicians, than to take up little bits of statistics on the principle that anything was good to beat a dog with, and to throw out anything to the public which seemed to be in their favour, without examination and without investigation. Against that mode of using statistics the Society ought to protest continually, and it was very satisfactory that Dr. Balfour in his opening address had called attention to the difficulty of using statistics properly, and to the necessity for the utmost care in dealing with figures. The various illustrations which Dr. Balfour had given were most striking and useful, and he hoped in thus dealing not only with the special statistics which he mentioned but with other statistics, they would all remember that this question of method and of the logical treatment of figures was of very great importance. The two illustrations he gave as to the difficulty of deductions inferring the decay of the physical strength of the population from certain data as to recruiting, and as to inferring too much from the benefit of sanitary measures, were both remarkably good and striking. He should set the more store by the latter, because no doubt some people were tempted in promoting measures for the public benefit to overstrain the argument, and nothing was more dangerous. Because sanitation was a good thing, there was not the slightest reason why statistically the case for sanitation should be overstated, and Dr. Balfour had done good service by bringing forward the purest statistical and scientific point of view. It would also be most useful that he had done something to show the valuable service which statistics might render in so important an administrative work as that of the army. A good many of them might also have been enlightened a little as to the reason of the popular belief in the longevity of public annuitants. It really was worthy of observation that the longevity might be to some extent illusory, and that it was a matter entirely for investigation rather than for accepting the apparent fact without investigation. The importance of this question with regard to the future was also justified by what Dr. Balfour had called attention to, the increasing practice of giving annuities which were to be charged upon the public funds. There was no doubt it would be a matter of the utmost importance to see, as those annuities and pensions were increased, that they were not paying dead men's pensions. A good many of them had had some experience perhaps, not exactly in connection with annuities but in other ways; he had some experience himself not exactly of pensioners living to a great age, but of salaries being drawn in the name of people who had long ceased to do the work, and who were really getting the work done by other people. Abuses of that kind were always likely to grow up, and it certainly was important that they should be brought to book by statistics by those who had the power of looking into those matters. It was unnecessary to dwell further upon the topics which Dr. Balfour had brought before them, and he was sure the members would join in giving him a cordial vote of thanks for the address he had given to them.

Dr. MOUAT said it had fallen to his lot, unexpectedly, but it was a great pleasure to him that it had done so, to second the vote of thanks to Dr. Balfour. The terms in which it had been proposed by Mr. Giffen left him very little to add, but he might tell them something on the subject which was known to himself and to few if any of those whom he was addressing, viz., that with reference to the vital statistics of the British army mentioned in his address, Dr. Balfour was selected long ago by authority for a new office then created in connection with the War Department, in conjunction with the late Sir Alexander Tulloch. He was so selected by one of the most able medical officers in the army at the time, on account of his special aptitude for the work to be performed. Dr. Mouat had abundant opportunity of studying those statistics at the time of their appearance, and he had no hesitation is stating that no other army in Europe possessed so valuable and trustworthy a record of their vital statistics at a time when comparatively little attention was paid to such subjects. A very large share, indeed he believed the principal part of the audits attaching to those valuable reports, was due to the knowledge of the officer selected, who fully realised the expectations then formed of him. In his subsequent long and distinguished service he has afforded ample evidence of his claim to distinction as a trustworthy guide in statistical inquiries, and now, at the end of his public career, the estimation in which he was held has been emphasized by being placed at the head of this Society, a post to which he has just given good proof of his fitness by the excellent address to which they had listened with so much pleasure, and he hoped profit.

The resolution was carried by acclamation.

The PRESIDENT said he begged to thank them for the very kind manner in which they had received his address. He also wished to express his obligations to Mr. Giffen and Dr. Mouat for the gratifying terms in which they had spoken of his labours, which he thought were only too flattering.

At p. 703, line 24, for "audits," *read* "credit."

The ADDRESS *of the* PRESIDENT *of* SECTION F.—ECONOMIC SCIENCE *and* STATISTICS—*of the* BRITISH ASSOCIATION, *at the* FIFTY-EIGHTH MEETING, *held at* BATH, *in* SEPTEMBER, 1888.

By THE RIGHT HON. LORD BRAMWELL, LL.D., F.R.S., &c.

IT gives me great pleasure to meet you here to-day as President of this Section. Forgive me if I trouble you with a purely personal reason—it is that my brother, Sir F. Bramwell, is President of this Association. That is a great distinction, of which he ought to be and is proud, and one in the enjoyment of which I am proud and glad to see him.

There is another reason, not so purely personal, though somewhat so. At a meeting of this Association nine years ago it was said—and in this Section—not that political economy was dead, but that it had never lived—that there never was such a science. This was an awful shock to me, who for nearly two-thirds of a century have been trying to learn something about it, and who have considered, and do consider, that there is no branch of knowledge more important than that of the truths of political economy. The argument attracted a good deal of notice, but for my own part I confess I never understood it. It was said that political economy was not an independent science, but a branch of one more extensive. It seemed to me as bad an argument as one which should say that ornithology was no science because it was only a part of natural history.

Whether political economy can be classed under some title comprehending it and other sciences, I know not. Perhaps "sociology" would do. But, whether it can or cannot, it is equally a science—equally a collection of truths relating to a particular subject which constitute the knowledge of that subject.

The truth is that political economy is not only a science, but a necessary science when men have formed themselves into a society. What will be the best way to add to the wealth of a society must be a subject of study by that society which will lay down rules—that is to say, make laws for the purpose—and this is political economy. Adam Smith was not the first political economist, though well called the father of those rules which now prevail. But rules for the purpose existed before him, the great objection to them being that most of them were wrong. There was a law that the dead should be buried in woollen. The object was the encouragement of sheep breeding, and the reasons given were such as would be given nowadays in support of any proposal of protec-

Google

tion or bounty for the agriculturist or grazier. Let us see. The most important of our industries is that which works the land. It employs great capital and much labour. If people are buried in woollen, wool will rise in price, sheep will be bred, mutton will be cheaper, and so on. So laws were made for fixing wages—laws were made against regrating and forestalling, which, as Adam Smith points out, were laws against providence and thrift—laws which would have made a criminal of Joseph, who saved in the seven abundant years, and showed himself sounder as an economist than our ancestors were.

Then think of the usury laws. All usury was thought wrong on religious grounds. But in Henry the Eighth's time 10 per cent. was allowed, not because that was right and 11 per cent. wicked, but because it was supposed that trade would be injured if more than that percentage could be taken for interest. The percentage has been gradually lowered till forty or fifty years ago, when sound economical reasons prevailed, the usury laws were repealed, and now any amount can be taken. Mr. Henry George, however, of whom you may have heard, thinks all usury wrong. He calls himself an economist; perhaps rightly. If he is, he is a bad one.

You cannot deny that these were economical laws because you think them wrong. There are now free traders and fair traders—one is right, the other wrong. I think I know which is which, but I suppose each party would call itself economical, and could only be said not to be by the other because it was not right in its notions. So also, I suppose, the homœopathists and the allopathists are both doctors, both professors of the science of medicine, though one at least is wrong, perhaps both.

It may be said that all the instances I give are instances of erroneous economy. True. The good political economy of those times was abstinence from legislation—the cases where people were not meddled with. Buckle said, very truly, that the good done by modern legislation was the repeal of the old. But let us see a little of the good that right opinions on political economy have brought about.

It has made the workman a free man. He may employ himself in any work which he can get trusted to him. He may demand any wages he thinks right, refuse to work for less, and get all he can. He is no longer, by the mischievous laws of settlement, almost confined to the parish where he was born. He may go to any part of the kingdom in search of work. He is no longer subject to punishment for joining with his fellows to better his condition. He may combine with them, and agree that they will, as a body, refuse to work unless their wages are raised or other demands complied with. His doing so is no crime, provided he does not violate the freedom and rights of others.

Then look to capital. The capitalist may employ his capital as he thinks fit—in home trade or foreign trade, in using it himself, in lending it to others. He may join with others on the ordinary terms of private partnership, or in joint stock corporate partnership, with liability limited or unlimited, as he thinks fit.

But as to the goodness of following right economical rules, I say, "circumspice." Look around! They have been more studied and more followed here than anywhere else. Compare this country with any other. Look at its greatness, its wealth, the comfort of its people, of all classes, as compared with other countries. I do not deny our natural advantages, our mineral wealth, our admirable situation, and, mostly, the bodily and mental condition of our people. But they would have been comparatively wasted under bad economic laws. I may be told that the United States of America beat us for wealth and general prosperity, as to which I will only say that they are cultivating only their best land. We are driven to our worst. And, further, that their best writers and reasoners support very different economic laws from those which prevail there.

I say, then, political economy is as old as society, and exists of necessity, and is most important; for on the goodness or badness of the rules its professors believe in to a great extent depends the happiness of society. I believe its rudiments should be taught to all, and I believe that learning them would not be difficult.

For what is it when truly understood? Man has desires and wants, and therefore a disposition to gratify them, and has also a pleasure in an active life and in attaining his objects. But he has also a desire for repose, and his power of work is limited. Bearing these things in mind, political economy inquires what are the best ways for man to attain these objects. It is not necessary that the student should master all the ingenious and elaborate definitions in which writers on political economy delight. I have in my mind a book, very clever and very profound, which I cannot read. It is very subtle, but not practical, and after a few pages I get bewildered. Value, wealth, capital, labour, currency, and other things are refined on to weariness, in spite of the talent exhibited.

It is a singular thing that another most important matter is very much dealt with in a like way. One would suppose that any educated person would like to have some acquaintance with the laws of his country—certainly that Englishmen would, as they are proud of their laws, and they are responsible for them. For, if wrong, the power to alter them is with those they rule. But a similar argument is used—"The law is so dry." I deny it. No doubt, if you have to learn how to serve a writ, and how many days a defendant has before he need plead, and so on, it is dry and wearisome enough. But if the study is not of the practice of the law, but of its broad general principles, it is quite otherwise. Of the four volumes of "Blackstone's Commentaries," three, to my mind, are most agreeable reading. These general principles should be taught as a part of ordinary education. So of political economy—it has been called a dismal science. I never could read ten pages of him who so called it. It has been called inhuman and unfeeling. The same epithets might as well be applied to "Euclid's Elements," or to a treatise on baking or brewing. Indeed, much more reasonably, for political economy lays down those rules which will procure the greatest amount of enjoyment.

The governing precepts of political economy are few. In my judgment its main one is "laissez faire"—"let be." As M. Molinara says, "Notre évangile se résume en quatre mots—" 'laissez faire, laissez passer.'" Leave everyone to seek his own happiness in his own way, provided he does not injure others. Govern as little as possible. Meddle not, interfere not, any more than you can help. Trust to each man knowing his own interest better, and pursuing it more earnestly than the law can do it for him. I believe this maxim will justify most of the rules that right economists have laid down—let your people buy in the cheapest and sell in the dearest markets. That enjoins free trade. For the trader, whether he buys at home or abroad, seeks the cheapest market. If a duty is put on the foreign article to protect the home producers, the trader is interfered with. The consumer is interfered with. The law says he shall not consume that which he can get at the lowest price—that the producers, the capitalists, and labourers shall not employ their capital and labour as they would if left to themselves; shall not produce something they could exchange with the foreigner for something he can produce more cheaply than they; shall not buy of him, and so shall lose him as a customer, and so, not being able to employ the capital and labour on what he would take, therefore must employ it in some other way.

I say this is one of the most important precepts of political economy. It is plain and simple—a broad, intelligible principle; and so are all the leading truths of economic teaching.

But it is not my intention to treat further on the science generally. One subject, on which I wish to say a few words particularly, is socialism. I once said to Mr. Newmarch, known to many of you as a most able man, "I am a bit of a socialist." He said, "Yes; every right-minded man has a tendency that way." Our reasons were the same. It is impossible not to have a doubt or misgiving, whether it is right that one man should have in an hour as many pounds sterling as another has in a year; whether one man should suffer the extreme of misery and privation, and another have every, not only necessity, but superfluity. It is a truth hard to believe; but I am satisfied that it is a truth. The great object of a society in this matter should be to make what the Americans call the largest pile—the greatest quantity to be distributed and consumed. I do not say that a more equal division than exists is not desirable, but I say that in the attempt to bring it about by law the pile will be reduced. If you gave an equal share to each, do you suppose—can anyone suppose—that each would work as hard as he does now? A man would know that the lazy and idle would indulge themselves at his expense if he worked. He would feel he had a sort of right to do the same, and he would do it. I repeat what I have said, that when men are as honest as the bees we may have socialism or communism—not till then. As to the argument or assertion that all men are equal and have equal rights, it is untrue, and absurdly untrue. It is equivalent to saying that all men are equally strong, equally industrious, equally clever. Why should not the more industrious man be better off than the less industrious? No reason can be given. But, if that is true of industry, why is it not true of strength and cleverness? They are natural gifts, as well as the love of work. Natural rights are talked of. Nonsense! Natural rights may exist when man is in a state of nature. What they may be I know not. But when man is in a social state his rights are what the law gives him; and if the law is wise it will give him all he can get. Poverty and misery shock us, but they are inevitable. They could be prevented if you could prevent weakness, and sickness, and laziness, and stupidity, and improvidence; not otherwise. To tell the weak, the lazy, and the improvident that they should not suffer for their faults and infirmities would but encourage them to indulge in those faults and infirmities. If it is said that poverty and misery may exist without fault in the sufferer, it is true. But it is but rarely that they do, and the law cannot discriminate such cases. To attempt to remedy the disparity of conditions would make the well-off poor, the poor not well off. Socialism is not good for man till man himself is better.

Not that I think that socialism would be better even then than our present state. Nothing could compensate for the loss of the pleasure and excitement of struggling for the good of ourselves and of those dear to us, unless, indeed, we could feel an equal pleasure in working for the hive. But then we should be something different from what we are.

Private charity may be useful, not in indiscriminate gifts and doles—soup kitchens, coals, flannel, and clothes given to all who apply—but in careful relief, given in no case that is not investigated and seen to be deserving of help. All charity is mischievous which is given to those who ask merely because they ask and say they are in want. In this way by careful and discriminate charity the man of wealth with Mr. Newmarch's socialist tendency may do good and relieve his conscience.

But beside this socialism—the socialism of the streets, well so called by Mr. Crofts, who gives a clear account of it—this communism—there is a mischievous disposition abroad which is continually urging on Parliament, and Parliament is too ready in agreeing to—invasions of private liberty and of private property. It is quite certain that the number of orders we are under has vastly increased. It is very clear also that private property is not regarded with as much respect as it was. Everything that is said or written against it is listened to with favour. The land particularly is attacked. Mill's "unearned increment" is quoted as justifying taxation, as though, when private property in land was established, it did not, as in reason it did, include all increment, earned or unearned. The legal proposition of Mr. Joshua Williams that all land in this country is held of the crown or other lord, and so the absolute property is not in the owner, is quoted to justify taking away all property in it. My old friend would have been horrified at the ridiculous and erroneous conclusion drawn from what he said. It is quite true. But all it means is this—that if a man dies intestate and without heirs, his land escheats to the crown or other lord; so do his horse and his watch. We are not as bad as Mr. George, who has the audacity to suggest that land should practically be taken from its owners without compensation—on this principle, that their ownership was always a wrong, and they should not be compensated for being stopped doing wrong. Is it credible? Two men have saved a competency for their old age. One has bought railway stock, another land. Both have trusted to the law. The one is to have his land taken from him because he is a wrongful owner; the other is to keep his railway stock! This is approved of by some who call for the "nationalisation of the land." The best thing to be said in their favour is that they attach no definite idea to the words. They do not know what they mean.

Another remarkable instance of this attack on property in land is the desire to tax what are called ground rents. I think this is the result of want of knowing better. A man has three pieces of land of the same size, situation, value. On one he builds a house at a cost of 1,000*l.* and lives in it; on another he builds a house at a cost of 1,000*l.* and lets it at a rack rent of 65*l.*, putting the annual value of his land at 15*l.*; the third he lets to a tenant at 5*l.* a year for fifty years on the terms the tenant lays out 1,000*l.* in building a house. He, the landowner, gives up 10*l.* a year because he will have the house at the end of fifty. The tenant is willing to build the house and give it up at the end of fifty years, because for those fifty years he will have land for 5*l.* a year which is worth

15*l*. Can any human being give a reason why any one of these three houses, or their owners and occupiers in respect of them, should pay more taxes or rates than any other of them?

Then we have the enfranchisement of leaseholds. As you are to have a paper read on this, I will say no more than that you do not compensate a man when you take from him what he would rather keep as a matter of business than have what you give him—not if it is twenty shillings for his sovereign.

I regret to say that these schemes and ideas receive encouragement from Parliament. I was told by a gentleman, than whom there is no better authority, when the Manchester Ship Canal was unable to raise capital, that it was owing to the distrust that existed among capitalists that their property was not safe—a distrust, I regret to say, well justified. The water companies of London were entitled to charge according to the real annual value of the houses supplied. An Act was passed at the instance of a private member that the charge should be on the rated value, which is very commonly five-sixths of the real value. It was passed by some who knew no better, by others who did, not without a blush; but it was 9,000*l*. a year loss to one company. In this last session the following was done. If the railway companies do not make a tariff of maximum charges satisfactory to the Board of Trade, that Board may make one. In the Government Bill it was provided that their tariff should be "just and reasonable." It was objected that they might think something less than their right by statute would be just and reasonable. So it was suggested that these words should be added, "equivalent to their existing rates." This was adopted. I need say nothing more in its favour than that Lord Selbourne approved it. This was in the Lords. The Commons struck out the words "equivalent to their existing "rates." The Lords acquiesced. The ever-ready marquis gave as a reason or excuse or answer that Parliament would not adopt the new rates unless they were equivalent. But why did the Commons object to the words except to provide a power to alter the rates to what will not be equivalent?

I say property and freedom of action are not held in the respect they were and ought to be. It is to combat this that the Liberty and Property League has been established, and has struggled under their able chairman and their indefatigable secretary.

The following specimens of proposed interference with property and freedom of contract may interest you: A Bill to give everyone a right of access to mountain or uncultivated moorland for recreation or study. A Bill that, notwithstanding any agreement to the contrary, a tenant may obtain compensation for *improvements* done against the landlord's consent. A Bill to compel employer to give his servants holidays without deduction from wages. Another Bill to let tenant *improve* without and against his landlord's consent and opinion, and against their agreement. A Bill that a colliery tenant may, *notwithstanding any agreement to the contrary*, have his lease extended if he has been unable to work owing to depressed state of trade. A Bill that everybody may fish in rivers which are highways or along which there is a right of passage. A Bill that property may be taken for labourers' dwellings without payment of compensation for loss of trade, profits, goodwill, &c. Another similar Bill, but one year's profits allowed. A Bill which may shortly be described as one to introduce into Scotland the mischief of the Irish Land Acts. A Bill that lessees of mines in Cornwall, *notwithstanding any agreement to the contrary*, may remove buildings. A Bill giving general right in Wales and Monmouth to go on lands for recreation, winberry gathering, scientific inquiry, sketching, or antiquarian research. A Bill that in every execution against the goods of a household necessary furniture to the value of 20*l.* shall be exempt. In these cases rights of property and freedom of contract are violated.

Just one word as to protection and fair trade. I have said of "fair trade" that it is a taking phrase; but really it is unmeaning. Does a foreign nation tax our goods for the sake of revenue? What is there unfair in that? Does it do so because it is unwise enough to believe in protection? Again, what is there unfair in that? Is it unfair to sell to us and not buy? Why? There is no deception. We will not buy of you; we do not compel you to sell to us. If you do, it is because it suits you. But let us drop the words and look at the substance. If, by not buying of the foreigner, we could make him buy of us, there might be some reason in our refusal to buy. When a case of that sort is shown it will be worth considering. Till then, if we buy of those who will not buy of us, it is because it suits us, as they say. Why? Because we get the thing we want when otherwise we should go without or get it dearer. Remember, we must pay for it; and to pay for it we must produce something else, which it is worth our while to make, and change for it—I do not mean change specifically. We deal with the world. From parts we get gold and silver. With them, with goods, with what is owing to us, we pay those who do and those who do not buy of us. A friend said: "Dear me, our imports are "350,000,000*l.*, our exports only 230,000,000*l.*," or whatever was the figure. I said, "I wish we could get them for less." Is protection to be argued over again? There is not a reason that can be given for it that would not be equally good for protecting tariffs between London and Southwark.

There is one more particular subject I wish to speak on. It is certain that the wonderful labour-saving inventions of modern times have diminished the manual labour required by Society. If the food, clothing, and habitations of mankind are got and constructed with less labour, fewer labourers are required. Of course, I know the well-recognised truth that man's wants and wishes are never more than supplied. But everything in this world is relative, and, though every one might like more than he has, yet his wants diminish as his havings increase. Happily, one good result of this saving of labour has been a diminution of the hours of work, an increase of leisure, one of the good things desired by mankind. But there is always a risk that, if work does not increase and workmen do, the competition among them will diminish their rewards. Another thing to be remembered is that our mineral wealth—certainly our coal—is diminishing. Further, that foreign competition increases; we have taught others how to rival us. I do not prophesy our decadence; I have the greatest confidence in my countrymen. But I do think there are considerations which should make us rejoice if our population did not increase as fast as it has done. I am glad to think that the rate of increase in the last few years has not been as great as it was formerly. No doubt a great increase of population is in one sense a cause of rejoicing. It shows a prosperous condition of things, and adds to the strength of the State. But it inevitably *tends* to a lowering of wages and a lowering of the standard of comfort in the labouring classes. It may be, and in this country has been, counteracted by other circumstances, but there is that tendency. I never sympathise with the exultation at our increase in population compared with the French. I think it very doubtful if they do not show more foresight and thrift than do our people. It is sad to see the improvident marriages of boys and girls without a shilling, or a chair or table. Of course, it is a charming thing for a man after his work to go to his home, find his comfort has been cared for by an affectionate wife, and have his children to play with, and I believe that such a man is more likely to keep out of mischief and out of the public house; the attraction there is less, and he feels his responsibility for those dear to him. But the home should be a comfortable one for him, and this it will not be in the case of the improvident marriages I mention. I do sincerely think that they are earnestly to be deprecated, especially at the present time, and I am glad to think they are diminishing.

I will not trouble you further. I daresay there are many among you who do not share my love for political economy. I have endeavoured not to weary you, but to place before you some leading principles and considerations. I believe and repeat that correct opinions on the subject are most important, and that the acquisition of them is neither difficult nor repulsive.

RECENT CHANGES *in* PRICES *and* INCOMES COMPARED.

By R. GIFFEN, ESQ., LL.D.

[Read before the Royal Statistical Society, 18th December, 1888.
F. B. GARNETT, Esq., C.B., a Vice-President, in the Chair.]

CONTENTS:

	PAGE
Preliminary	713
The Appreciation of Gold	719
The Degree and Character of the Appreciation	727
The Appreciation or Depreciation of Silver	740
Characters of Appreciation and Depreciation at different Periods	745
The Causes of Appreciation and Depreciation	749
The Redistribution of Wealth	758
The Future Course of Prices	762
APPENDICES.	
A. Extracts from Replies to Circulars issued by the Royal Commission on Trade Depression as to Rate of Wages	768
B. Germany: Building Wages, Expense of Living; Wages of Railway Employés, &c.	800
C. Wages in Cotton Spinning and Cotton Weaving in Belgium	802
D. Mining Wages in Belgium	803
E. Averages of Price of Flour; Workmen's Wages in Belgium, &c.	803
F. Wages in Italy	804

Preliminary.

ALMOST ten years ago I read a paper to the Society on "The Fall "of Prices of Commodities since 1873,"[1] in which the suggestion was made that we were probably then in presence of, or about to be in the presence of, the phenomenon known to economists as appreciation of money, *i.e.*, as our money is gold, appreciation of gold. The subject has since been widely discussed as a branch of the great bimetallic controversy, but I have not myself engaged in it except to reiterate the original suggestion in a paper on "Trade Depression and Low Prices" in 1885,[2] and to discuss generally some aspects of the theory of the relation of the quantity of money to prices.[3] It may now be permitted to me to return to the topic, and to explain more fully than I have hitherto thought of doing the extent and nature of the appreciation which was only a little more than apprehended when I wrote in 1879, and some of the problems that arise for discussion in connection with it. In doing so I hope to be excused if the bearings or alleged bearings of the discussion on the bimetallic controversy are avoided. Mr. Bagehot said in his "Lombard Street" that he proposed to keep clear in that book of the Bank Charter Act, because if he spoke on that subject nobody would heed what he said on any other. It would be much the same now with bimetallism: if that topic were to be touched upon, the main topic would be forgotten. It is of the utmost importance, however, that the question of the appreciation of money at the present time should be discussed for its own sake as a question of fact merely, and as a purely statistical rather than an economic question; a practical currency controversy interposed only confuses issues of the utmost consequence.

---

[1] See Statistical Society's *Journal*, March 1879, and "Essays in Finance," 1st series.

[2] See "Essays in Finance," 2nd series, p. 1.

[3] See "Essays in Finance," 2nd series, p. 37.

There is the more reason to keep clear of all controversy because it may be hoped that much of the discussion which has gone on will be shown to be verbal only, or to arise from mutual misunderstanding of terms. The leading facts are not really in dispute, and the only question is how to arrange and name them and use them in other discussions. When the phrase is properly limited and defined, the appreciation of gold of late years will be found to be in reality universally admitted, although in words opposed and controverted by many. Limitation and correct definition will enable us also to explain in what sense and to what degree, if any, silver has depreciated.

It will be convenient to begin with a few explanations and definitions.

First it is convenient to employ the phrases appreciation of money and depreciation of money in a strict study of the subject, and when the expressions are used scientifically, as the mere equivalents of the fall or rise of the prices of those articles or groups of articles with which money is compared. In other words, in this sense appreciation of gold would be only another phrase for a rise in the purchasing power of gold—depreciation for a fall in that purchasing power.

The phrases have no doubt been used as bearing a different meaning, though a meaning, it is to be feared, not very clearly defined, and I should not pledge myself that there is no passage in my own writings, though I trust I have generally been careful, which does not seem to read into the phrases a larger meaning than what is here expressed, but the convenience of strict definition, if it can be adhered to, is self evident. It agrees best, moreover, with the original literary use of the expression, purchasing power of money, and if the phrases did not exist in this sense, it would be absolutely necessary to invent phrases that could be so used.

It will be observed, moreover—and this is most important—that the phrases are themselves incomplete. To make them intelligible we must always understand or sub-understand some definite thing or things with which the money is compared. Instead of the general phrases, appreciation or depreciation of gold, appreciation or depreciation of silver, appreciation or depreciation of money of any kind, we ought to say in each case, appreciation or rise in the purchasing power of gold measured by wheat, or pig iron, or copper, or a certain group of articles arranged in a way so as to show a mean or average; and so on: whether we speak of gold or silver, or any other kind of money, always there must be something definite said or understood.

It may be convenient to assume afterwards that what is true of the measurement of gold or silver, or any sort of money, by one article or a group of articles, would be true if an average of all articles could be constructed; but always the scientific language which is exactly true is definite enough, and a clear line should be drawn between what is exactly known and what is inferred.

Confusion has arisen because a convenient shorthand phrase has come to be used dissociated from its primary uses, and its necessary limitations have been forgotten. The origin of inquiries as to changes in the purchasing power of money was largely historical. What a historian sometimes wants is to be able to say that a certain payment two or three centuries ago represents so much in the money of a different time, usually the present. But all that has ever been proposed, or is necessary, for such purposes, is to measure the money by certain other articles, and give an approximate answer more or less complete. What the measure should be, for what purposes it can be used, and so on, are later questions, but the idea of an external measure of money of some kind is necessarily involved in any references to changes in its purchasing power. When we speak scientifically we must say the purchasing power of money over certain definite things, although popularly our idea may be the purchasing power of money over things in general, or the bulk of things.

The next preliminary point is that in dealing with the appreciation or depreciation of money, the nature of the economic movement in the country where the appreciation or depreciation takes place, or in two or more countries which may be compared, ought to be carefully considered. The signs of appreciation or depreciation are not the same in any two cases unless the economic movement is the same.

Thus in a stationary community, which goes on from year to year with the same population, producing and consuming the same things, and neither advancing nor going back, appreciation or depreciation of money, should it take place from any cause, would probably have uniform effects. The fall or rise of prices would extend to all commodities equally, and to wages and incomes also.

A rise would entail a proportionate increase of wages and incomes; a fall a proportionate decrease. Nothing would be easier apparently than to ascertain appreciation or depreciation in such a community.

Of course, however, there is no such ideal community. In actual life the disturbance of money alone would probably disturb a great deal besides.

The case of an absolutely retrograding community, which is no doubt a very rare one, would supply somewhat different signs. It is quite conceivable that in such a community there might be a depreciation of money measured by commodities or large groups of them, and yet there would be no apparent increase of wages or incomes, because, the community retrograding, there is less of real things to divide, and there being in fact as much income expressed in money to go round as before, the loss to the community by its retrogression might be measured by the percentage rise of prices. Superficial observers would, however, be apt to say that because there is no rise of wages or incomes there is no depreciation of money, although there is unquestionably depreciation when commodities are the measure.

Retrogression is a rare case, but advance is not so rare, and we must consider carefully what may be the signs of appreciation or depreciation in an advancing community as distinguished from a stationary community.

Three kinds of appreciation and depreciation—six cases in all, if not seven—may apparently be distinguished plainly in such a community:—

1. As regards appreciation there may be a case of falling prices of commodities coupled with stationary incomes and wages. In this case the fall of prices might be the measure of the increase of the return to the industry of the community, assuming that the labour employed in services improves generally as does the labour employed in the production of commodities. Still measured by commodities there may be an appreciation of money, although the diminution of wages and incomes which accompanies some forms of appreciation of money is absent.

2. There may be a case of less wages and incomes per head, in which case the fall of prices would be greater than in the first case, and the *difference* between it and the fall in wages and incomes might represent the advance in the return to the industry of the community. But the only distinction between the first and second instances is clearly the degree of appreciation. There can be no warrant for saying that in an advancing community appreciation as it has been here defined may not take place without an actual diminution of wages and incomes.

3. There may be a case of not only less wages and incomes per

head, but an absolute diminution of the aggregate of all individual incomes, notwithstanding an increase of population. In this last case the fall of prices and diminution of wages and incomes per head would be more severe than in the second case, where the diminution per head might not be so great as to prevent altogether the growth of the aggregate of individual incomes. Still this extreme form of the appreciation of money must not be looked for in every instance.

4. As regards depreciation again, there may be a case of stationary prices of commodities coupled with increasing wages and incomes per head. The increase in the latter case might correspond with the increase of the return to the industry of the community.

The important point to understand is that there may be a case of what may properly be described as depreciation of money where prices do not rise, just as there may be a case of appreciation where incomes and wages do not fall. Measured by incomes, though not by the prices of commodities, there may unquestionably in such a case be depreciation.

5. Depreciation may go so far that there is a rise of wages and incomes more than in proportion to the increase of the return to the industry of the community, in which case the improvement in the latter might be measured by the *difference* between the rise in the prices of commodities and the rise in wages and incomes.

6. Depreciation may go so far that there is absolute inflation in all prices along with a continued cheapening of production. In this last case along with the rise in commodities there would be an enormous rise in wages and incomes. But there may well be depreciation rightly called such without this extreme.

There is also as already hinted a seventh case, which may be described as intermediate between the mildest types of appreciation and depreciation above specified, a case namely in which, on the one hand, prices fall a little, showing appreciation measured by commodities *pro tanto*, and on the other hand wages and incomes rise a little, showing depreciation measured by incomes *pro tanto*. Such a case may in fact occur in an advancing community, however it may be described.

It is expedient to put the cases thus generally, in order to understand in what class in each country respectively we are to put the appreciation of gold or depreciation of silver at the present time. There is nothing but confusion possible so long as people argue that because wages have not fallen lately there is no appreciation of gold, or because prices have not risen in silver countries, or have even fallen a little, therefore there is nothing which can properly be described as depreciation of silver in those countries. The economic movement of the country concerned, and the degree of the appreciation or depreciation of money, according to the measure of the money employed, are first to be understood. It will be found also, I believe, that one of the puzzles of the matter is strictly connected with this point. The figures of appreciation of gold, measured by commodities, in European countries, have not been balanced by signs of depreciation of silver in silver-using non-European countries. If the economic movement in India has been different from that in England, if an increase of the return to industry has been absent there, or has been at a different rate, may it not be somewhat difficult to state what are the proper signs of depreciation in India to be looked for?

A short preliminary explanation may be useful on yet another point.

A rise or fall between two dates in the purchasing power of money—an appreciation or depreciation of money—in itself implies a contraction or expansion of money. There is relative contraction or expansion, and this is true on any view of the relation of money to prices. Whether the quantity of money in use is the cause or the effect of a given state of prices, or partly the one and partly the other, a low range of prices means less employment for money than there would otherwise be, and a high range of prices means more employment. Consequently when prices change from high to low or from low to high, there must be in the former case contraction, and in the latter expansion of money. Absolutely there may or may not be less or more money at the latter date compared than at the starting, the absolute amounts being dependent on many causes, such as change in people's habits and the like, but relatively there must always be contraction or expansion.

In connection with this last point yet another explanation may be made. Whatever the thing used to measure the purchasing power of money may be, it must be treated while so used as an absolute measure, and when we do so, it becomes necessary to treat the rise or fall in gold as due to a change of demand for, or change of supply of gold, leaving out all consideration of changes in the measure itself. This is done every day when money is the measure; we neglect any changes in money itself, and treat only of demand and supply of the things measured. For those purposes where money in turn becomes the thing measured, and a commodity or group of commodities or the bulk of commodities becomes the measure, it is equally necessary to consider all the changes as arising from the demand or supply of the thing measured, *i.e.*, money.

The question is largely one of language, and the two processes, viz., using money and commodities alternately as measures one of the other, are not inconsistent. The one variable is simply put against the other the better to understand the phenomena according to the special object in view. There is also a clear distinction between the cases where money is the measure, and those where another measure is sought. Money has become money because it changes least in short periods. For short periods therefore, and for comparing one commodity with another, in those periods, money is the common measure; any changes in it may practically be disregarded. But for longer periods, as already pointed out, the convenience of a different measure is felt. When we desire to know what the real wealth of a previous generation was compared with the present, some of the things which make wealth are found to be a better measure than money. Money then seems to change more from generation to generation than any other commodity almost compared with the average of the mass. But there would be no occasion for using a measure for money at all, unless the changes in the money were of such a kind that for the purpose in hand the changes in the measure used could be neglected.

The Appreciation of Gold.

Passing from these preliminary points, I begin by referring back to my former papers, and asking whether the suggestion there thrown out has since been confirmed by the facts, and in what sense there has been appreciation of gold in recent years.

Two things were stated with regard to the connection between the low prices of 1879, and the contraction of gold which had taken place in the years following 1873. The first was that the events in the money market consequent on the gold withdrawals for Germany, and for the resumption of specie payments in the United States, had contributed to the fall of prices by acting on the discount market, and assisting an oscillation from a credit to a discredit range of prices. This was an obvious and palpable fact of the time, but I laid no great stress on it. Oscillations in the money market and prices incidental to the ebb and flow of credit are familiar phenomena, and it could not be said in 1879 that the oscillation towards discredit was so very much more than usual, that apart from other circumstances the low prices should have been deemed remarkable. The second suggestion, however, was that although it was then early to speculate, there was reason to apprehend we were in the presence of, or about to be in the presence of, the phenomenon known to economists as appreciation of money. I did not define the terms, assuming them to be sufficiently understood by those interested, but the meaning I believe was clear enough. Appreciation or depreciation of money being phenomena only to be measured at long intervals, for it is only at such intervals that it becomes expedient to make commodities a measure, and so to measure money, what I had in my mind was to suggest that the course of prices in the immediately following years would probably deserve attention; that when time had passed for another cycle of credit and discredit, it would clearly be seen whether prices had fallen to a permanently lower level than in the period before 1873, in which case there would be no question as to an "appreciation of money" having occurred. The reasons for that opinion, in which to a large extent there was only a repetition of what I had said so long ago as 1872, appeared also to be overwhelmingly strong. There was visibly a strong "pull" upon gold, which was passing out of circulation in England instead of passing into it, as in the twenty years before 1873. The production was obviously diminishing; there was also to all appearance an increase of the cost of producing gold, which pointed in the same direction of an increase of its purchasing power. All this was said with the least possible amount of theorising. The quantity of money in supply and the demands upon it were certainly assumed to have some connection with prices, the theory of the connection having never before been disputed to my knowledge, but I did nothing more than point out that if the world was about to witness an appreciation of gold—a rise in its purchasing power measured by commodities, and ascertained after long intervals, so as to allow for minor oscillations and to permit of the use of the fact for the comparisons to which it is adapted—then there were sufficient facts in the supply of and demand for gold to account for the appreciation.

If the test of prophecy be the event, there was never surely a better forecast. The fall of prices in such a general way as to amount to what is known as a rise in the purchasing power of gold is generally, I might almost say, universally admitted. There is much assertion in some quarters that there is no appreciation of gold, but the assertion is made by those who attach a meaning, or think they attach a meaning, to the words which I confess I am unable to make out and express in my own language, and there can at any rate be no doubt that, as the phrase is here limited and defined, we have for some years been in the presence of the phenomenon known as appreciation of money. Measured by any commodity or group of commodities usually taken as the measure for such a purpose, gold is undoubtedly possessed of more purchasing power than was the case fifteen or twenty years ago, and this high purchasing power has been continued over a long enough period to allow for all minor oscillations.

It would be slaying the slain to recapitulate all the facts as to the fall of prices; but as the question was first distinctly raised at our meetings, and the record may be convenient, we may refer briefly to the evidence adduced in 1879, and see how the tables look when continued to the present date, and what additional evidence has been worked up.

Let me first refer to the short table with which the paper in 1879 began, and which was made use of, it will be remembered, as an extraneous table which had been commenced several years before for another purpose, and which, though short, seems to me to contain a great deal:—

A.—*Prices of Leading Wholesale Commodities in January*, 1873, 1879, 1883, *and* 1885, *and December*, 1888, *compared.*

		1873.	1879.	1883.	1885.	1888.
Scotch pig iron	per ton	127s.	43s.	47s. 8d.	41s. 9d.	41s. 11d.
Coals	„	30s.	19s.	17s. 6d.	18s.	17s. 9d.
Copper, Chili bars	„	91l.	57l.	65l.	48½l.	78l.
Straits tin	„	142l.	61l.	93l.	77½l.	101½l.
Wheat, Gazette average	per qr.	55s. 11d.	39s. 7d.	40s. 4d.	34s. 11d.	31s. 9d.
„ red spring, at New York	per bshl.	$1.70	$1.10	$1.18	91c.	106½c.*
Flour, town made	per sack	47s. 6d.	37s.	38s.	32s.	33s.
„ New York price	per brl.	$7.5	$3.70	$4.30	$3.25	$3.60
Beef, inferior	per 8 lbs.	3s. 10d.	2s. 10d.	4s. 4d.	4s.	2s. 8d.
„ prime small	„	5s. 3d.	4s. 9d.	6s.	5s. 4d.	4s. 2d.
Cotton, middling upland	per lb.	10d.	5⅜d.	5 1/16d.	6d.	5 1/16d.
Wool	per pack	23l.	13l.	12l.	11l.	11l.
Sugar, Manilla muscavado	per cwt.	21s. 6d.	16s.	16s. 6d.	10s.	13s. 3d.†
Coffee, Ceylon, good red	„	80s.	65s.	78s. 6d.	71s.	91s.‡
Pepper, black Malabar	per lb.	7d.	4¼d.	5¾d.	8d.	7⅝d.
Saltpetre, foreign	per cwt.	29s.	19s.	19s.	15s. 3d.	16s. 6d.

* Corner.

† In 1888 this is the quotation of Brown West Indian. I have been unable to find a quotation for "Manilla Muscavado" in the usual price lists; but the price of Brown West Indian in 1885 was nearly the same as that here given for Manilla Muscavado.

‡ This is Ceylon Plan. Mid., as I do not find the old quality quoted in the lists before me. The price taken in 1885 was rather higher than Ceylon Plan. Mid. at that time, but the difference was not material, and I have now taken the top price instead of the mean price.

The advantage of this table is that it leaves off at a point when trade is good, and there has been a good deal of inflation in different quarters, but although some prices are higher now than in 1885, they are still in very few cases higher than in 1883, while they are far below the level of 1873, and a good deal below the level of 1879; the latter, it must be remembered, being a year of depression, while the present is a year of expansion. The fact of continuously low prices for the bulk of staple articles is accordingly established by this short table, and this is what is meant by an appreciation of gold measured by commodities. There may be no appreciation, using the words in some sense not clearly defined; but that if we measure by the mean or average of the articles named there is a rise in the purchasing power of gold is self evident. The phrase is only a synonym for the fall of prices. There can be no dispute about the fact.

To the same effect are the conclusions from the index numbers, of which there has been so much talk of late years—the "Economist" index number, Mr. Sauerbeck's number, Dr. Soetbeer's number, and the Board of Trade index number, the latter based on the average prices of imports and exports. These numbers are so well known that I may simply copy a few extracts from the records and place them side by side, along with similar extracts for the price of silver, leaving them to tell their own tale. The table of course could be easily enlarged:—

B.—*Comparison of the Index Numbers of the "Economist," Mr. Sauerbeck, Board of Trade Import and Export Prices, Dr. Soetbeer, and an American Index Number.*

	Average Years, 1868-77.	Average Years, 1878-87.	Decrease in Second Period.	
			Amount.	Per Cent.
I. "Economist"	2750	2300	450	16½
II. Sauerbeck	100	79	21	21
III. Soetbeer*	129	120	9	8
IV. American†	113	93	20	18
V. Board of Trade import and export prices: Exports‡	85·7	59·9	25·8	30
Imports‡	85·6	71·7	13·9	16
VI. Silver (Sauerbeck)	100	82	18	18

* 1866-75 and 1876-85.

† 1866-70 and 1876-80. The American figures are not later than 1880. See Appendix III, appendix to first report of Royal Commission on Trade Depression.

‡ Figures of 1873 and 1883. These figures not being calculated for every year, it is not possible to give an average of a ten-yearly period; but the results would be much the same comparing any other years at ten years' interval.

Thus, whichever of these measures be adopted, we are equally led to the conclusion that, measured by staple articles, no matter how we select them, gold is found to have increased its purchasing power; and the increase has lasted over a long enough period to allow for minor fluctuations, and to show a change which can be made use of for such comparisons as a rise or fall in the purchasing power of money is adapted to illustrate.

In my evidence before the Royal Commission on Gold and Silver, I said a great deal about index numbers, and how they can be used, to which I may be permitted to refer here, as well as to the papers on the "Prices of Imports and Exports," laid before Parliament. Let me only say here, for the purpose of continuing the logical thread of the argument, that an index number, apart from the details of its construction, is a very simple matter. It is nothing more than a device to enable a mean or average to be struck of the prices of a great number of articles, the mean being the result of an addition of the prices of all the articles named divided by the number, and the average being arrived at after weighting the prices selected according to an estimate, on a subjective or objective basis, of their relative importance. The estimate in the case of the prices of imports and exports with which I have myself dealt, is on an objective basis, that of the relative importance of each import to the whole imports, and of each export to the whole exports. Formally the latter process gets rid of the only good theoretical objection ever made to the use of index numbers as a means of averaging a group of prices, the objection, viz., that all articles, important or unimportant, are treated alike; but I may state that practically, as the result of Mr. Edgeworth's mathematical investigations for the monetary committee of the British Association, of which several of us are members, the ordinary index numbers, which are exposed to the theoretical objections stated, yield much the same results as the formally more correct indexes. The reason is, that having been selected almost at random as it were from among staple articles which happened to be quoted in wholesale price lists, the articles in general have moved in sympathy, so that one selection yields much the same results as any other. This is what theory would lead us to expect, but in fact Mr. Edgeworth has tried and compared the different index numbers not only with each other, but with a new number based on a different objective basis, and for practical purposes there is not much to choose between them.

All this is important when we proceed to the next step, which is to infer from the appreciation of gold measured by the commodities or groups stated, the probable appreciation if we had for measure a still greater number of articles, or in fact all articles. This is a matter of inference; but when in fact the different groups include from 50 to 90 per cent. of the chief commodities in use or consumed, or good types of these commodities, it would require very strong suggestions as to an opposite movement in the smaller number of articles which cannot be brought to the test to overbalance the conclusion to which the index numbers point. There are facts which would lead us to presume that the fall of prices in the excluded articles has been even greater in proportion than in the case of the articles included; but without laying stress on this, the proportion excluded is so small that we may have confidence in the general conclusion from the actual measure. Thus it is a mere matter of arithmetical statement that, measured by any of the groups named, the purchasing power of gold has increased of late years; it is a matter of practical certainty, though there can be no arithmetical proof formally complete, that measured by things in general gold has appreciated —its purchasing power has risen.

There is also corroborative evidence of a very strong kind in favour of the same conclusion in various sets of facts as to values, which are referred to in the essay already referred to, published in 1885. These are the facts as to the growth of import and export values compared with the growth of quantities, the facts as to income tax valuations, and the like. The facts on these heads are now notorious. The logic of the use of them is that they show effects in a mass, and thus get rid of any objections based on the possible peculiarities of some prices, though these are also got rid of, as we have seen, in a different way. Thus as regards imports and exports, if we are entitled to assume from the growth of quantities a certain growth of business, then if the growth of import and export values is at a different rate, the inference clearly is that the money expression of the individual things has changed. Hence only can it be that the mass of values is lower. The same with income tax valuations, as I pointed out in my paper at the British Association last year, and as I shall have occasion to point out again in a book on the "Accumulations of Capital in "Recent Years," which will continue the paper read before the Society in January, 1878, and which is all but ready for publication. If the produce of land commands a less money price than before, rent falls and the capital value falls; if houses are built of less costly materials, object for object, their capital value and rent are also lower than thay would otherwise be. It is quite easy to calculate, given the increase of population, and assuming a certain growth in real wealth per head, what difference is made in the figures by the change in the money expression, which can only be ascribed to a fall in the money value of average things.

Now with regard to a comparison of the growth of imports and exports in quantities and values, the facts are very clear. To bring this out has been one of the objects of the various reports to the Board of Trade which I have made in the "Prices of Imports "and Exports," and it was obviously a point of various tables which were laid before the Royal Commission on Trade Depression. It is unnecessary to go into an elaborate comparison here. Let me only condense from the latter tables the following short table, comparing the growth of the money values of imports and exports per head with the growth of the entries of shipping per head:—

C.—*Average Imports per Head and Total Imports and Exports per Head of the Population of the United Kingdom in the Undermentioned Quinquennial Periods; with the Entries of Shipping per Head in the same Periods; also showing Percentage Increase or Decreases.*

[Extracted from First Report of Trade Depression Commission, p. 127, &c., and continued.]

	Imports per Head.				Imports and Exports per Head.				Entries of Shipping per Head.	
	Amount.			Increase or Decrease per Cent. on Previous Period.	Amount.			Increase or Decrease per Cent. on Previous Period.	Amount.	Increase per Cent. on Previous Period.
	£	*s.*	*d.*		£	*s.*	*d.*		Tons.	
1855-59	6	–	3	....	10	19	2	....	0·38	....
'60-64	8	1	4	34	14	4	3	30	0·45	18
'65-69	9	8	2	17	16	19	1	19	0·53	18
'70-74	10	17	2	15	19	19	3	18	0·65	23
'75-79	11	3	5	3	18	16	6	– 6	0·75	15
'80-84	11	11	–	3	20	–	1	+ 6	0·86	15
'85-87	9	16	9	– 19	17	15	10	– 11	0·86	....

Thus while, in the earlier quinquennial periods, the increase in values is more than the increase of shipping, although the latter is very great, the increase in values practically stops short about 1874, or amounts to very little after that; while the increase in shipping goes on at a very rapid rate, if not quite at so rapid a rate as formerly. There is much other evidence, if we go into details, of a rapid growth of our foreign trade, judging by quantities only, while values do not increase, for which those interested may be referred to the tables mentioned.

With regard to income tax and other property valuations, it will be enough to call attention to the failure of their growth as compared with the growth in the immediately preceding period, in the simplest manner. The following short table is extracted from the tables produced by Sir Algernon West to the Trade Depression Commission:—

D.—*Statement of Gross Amount of Profits Assessed to Income Tax per Head in Undermentioned Quinquennial Periods.*

[Appendix to First Report of Trade Depression Commission, p. 212.]

		£
1865-69.	Annual average per head	14·0
'70-74.	„	15·6
'75-79.	„	17·4
'80-84.	„	17·2

Allowing for the notorious increase in production per head shown by other statistics, such as the entries of shipping and the like, such a failure of money values to respond surely confirms the impression, derived from the above figures of fall of prices shown by index numbers and otherwise, as to the rise in the purchasing power of money being quite general. Whatever doubts may be raised as to the generality of the fall, when we look at prices merely, however grouped, there seems to be no room for them when we look at such mass observations as those of the growth of import and export values and valuations of property compared with the growth of things.

The evidence is not necessary for the purpose of proving the point, but the same divergence between the growth of quantities is noticeable in the statistics of import and export values, and statistics of property valuations, in foreign countries. The tables put in by myself before the Royal Commission on Trade Depression fully show this; and reference may also be made to a statement on this head by Sir Louis Mallet, in a note of his to the report of the Gold and Silver Commission.

It hardly seems necessary to mention the point specially, but so much has been said quite properly as to retail prices not following necessarily to the full extent wholesale prices, and as to the danger, therefore, of relying too exclusively on the latter, that it may be useful to point out the bearing of these mass figures on the question of how far wholesale prices are to be trusted as a measure of gold, because they may be assumed to be representative of prices of commodities in general. It seems to be plain that if retail prices did not follow wholesale prices more closely than would be thought likely at first sight, results like what is here shown in the mass would not appear. A little reflection will also show, I think, that retail prices can hardly fail to follow wholesale prices closely. So far as the difference between them and wholesale prices is made up by cost of distribution, there appears to be no small reason to believe, first, that the real cost of distribution, as well as the real cost of production, has lately diminished; and next that, at most, the mere cost of distribution is only a fraction, 20 or 30 per cent. at most, of the final cost of articles, so that, even if no economies are effected in distribution in a given period, the fall in wholesale prices must still drag with it substantially the fall of retail prices. Some retail prices may not fall nominally, as they embody largely labour expended on the wholesale article; but this phenomenon belongs in part to the phenomenon of a non-diminution of wages while prices fall, which may be the characteristic of some cases of appreciating money, and which is a characteristic of the present case, as we shall presently discuss. Thus the point of retail prices was a proper one to raise, and there is something in it, but there is nothing to prevent us forming the conclusion that the increase of the purchasing power of money of late years, indicated by the measure of wholesale commodities, is, in fact, quite general. We do not need to include all commodities, each properly weighted, to arrive at this conclusion.

The Degree and Character of the Appreciation.

The rise in the purchasing power of gold measured by commodities being established, it remains for consideration to which of the types described in our preliminary remarks this appreciation belongs? Is it an appreciation in which the income per head of the community, and the earnings per head of the wage earners, diminish? Is it an appreciation in which the aggregate income of the whole community diminishes? Or is it a case where incomes remain stationary although commodities fall?

I assume the community to be itself one of the advancing type, as in fact all the communities which are gold using undoubtedly are. Tried by the test of things produced, all these communities have lately been advancing in population and wealth, however difficult it may be to measure what the percentage of advance is. Appreciation of money in their case must accordingly conform to one of the three types stated: (1) a fall of prices along with stationary incomes; (2) a fall along with diminishing incomes per head; (3) a fall along with a diminution of the aggregate money income of the community. To which category does the appreciation belong?

The facts here are most difficult of measurement, owing to the want of records of wages in a tolerably complete statistical form. Records of wages for a purpose like the present ought to show the aggregate earnings of the wage earning part of the community, from which, with a knowledge of the population, the amount per head can be deduced. With such records at short intervals, the result we now wish to arrive at would appear at once, not as a matter of inference, but as a statement of fact. But no such records are in existence. Instead there are only records of isolated rates of wages, not "weighted" in any way, with apparent changes in opposite directions from time to time, so that it becomes most difficult to deduce what the general movement is. Fortunately for us, however, there is in England at any rate a record of a large part of the income of the nation which may be considered tolerably complete, and which may help, along with careful study of such wages records as exist, to show what the conclusion on the point before us must be.

The records referred to are those of the income tax, which have already been quoted for another purpose, but which may again be used with greater detail for the somewhat novel question now raised. Here there is an account of a large part of the gross income of the nation from time to time, largely, though not exclusively, the earnings or profits of capital. Assuming the recipients of this income not to change greatly from year to year in proportion to the general population, though we cannot count their numbers, then we may infer that the income per head diminishes or increases as we find that the annual amount divided by the numbers of the general population diminishes or increases. We can also see directly whether in the aggregate this portion of the national income diminishes or increases.

Looking at the income tax income then we find that the figures for the last twenty years, ending 1886, and beyond this we need not go, are as follows:—

Income Tax Income in the undermentioned Years.

[In millions.]

	£		£
1867	424	1877	570
'68	430	'78	578
'69	435	'79	578
'70	445	'80	577
'71	466	'81	585
'72	482	'82	601
'73	514	'83	613
'74	549	'84	628
'75	571	'85	631
'76	579	'86	630
Annual average	492	Annual average	599
" per head	15*l.* 10*s.*	" per head	17*l.*
" of 1875-76,	17*l.* 8*s.* 6*d.*	" of 1885-86	17*l.* 5*s.*

This shows a material increase even in the amount per head, comparing ten years' period with a ten years' period. It will not fail to be observed, however, that while in the first ten years' period, the increase from the beginning to the end of the period is very great, the reverse is the case in the second ten years' period, the income having increased little all through. The average in the first ten years' period is thus the average of years of rapid growth; the second of an almost stationary period. Comparing the two last years of each period only the income per head is found to have even slightly diminished.

Unless therefore there has been something different in the progress of non-income tax incomes from what has taken place in income tax incomes, the inference would be that the appreciation of gold measured by commodities of late years is an appreciation which has not extended, or has yet extended very little, to the diminution of incomes per head, much less to a diminution of the aggregate of individual incomes; in other words it must be an appreciation of a comparatively mild type.

So far as I can judge, also, what we do know of wages points in the same direction. I shall mention the facts and circumstances which seem to point in this direction, and refer to and explain any opposing facts which seem to point in the opposite direction.

First then there is a general impression that wages have not declined at all, or at least have declined very little. Popular impressions count for very little as a rule when they can be brought to the test of figures; but if there had been at all a general and heavy fall of wages, a fall at all approaching the fall in the prices of commodities, it is an event which must have made a great deal of noise. I remember Mr. Jevons, who was present when I read my paper in 1879, remarking to me as we left the meeting that he looked forward with some foreboding to an appreciation of money, anticipating, as we all did then, that wages would follow suit to the fall of prices, and not adverting to the possibility of a considerable fall of prices without incomes per head declining. That there have not been strikes and lock-outs on an extensive scale, such as Mr. Jevons anticipated, is evidence *pro tanto* that the general and severe fall in wages he rather looked forward to, and many more of us also looked forward to, has not in fact occurred.

As a farther proof of there being no great fall in wages, I may perhaps remind you of Mr. Goschen's puzzle on this very head when he delivered his address on appreciation of gold at the Bankers' Institute in 1883. He could not then account for wages and incomes keeping up and prices declining. Since 1883 certainly there has been no material decline of wages, and the puzzle would remain unless upon the hypothesis now put forward of an increase of real wealth, which is represented by the same money income as before, but to which the fall of prices ensures that the same income will go farther than it did.

I have still more important evidence to adduce, however, as to the generality of the impression that there has been no general fall in wages of late years corresponding to the fall of commodities. Looking over the bulky volumes of the Trade Depression Commission, we find that one of the questions put to chambers of commerce and other mercantile bodies, and to workmen's associations, bore on this very point. They were asked to say in 1885 whether wages were then less on the average than they had been in the previous twenty years. This was not precisely the question we should have liked to put for the present purpose, but allowing for the fact that the average would include the inflated years of 1872-76, the answer that wages were not then under the average of the previous twenty, or very little under the average, if at all general, would seem to show that there can have been no material fall in money wages of late from the average of the ten years 1867-76, which is the starting point of the comparison of the fall of prices. The answers however are most conclusive on the point. I have extracted them one and all, except one or two detailed tables which I deal with specially; and I have placed these anwers in the appendix. They speak for themselves. They seem to be absolute proof that there could have been no great and general fall in wages of late years.

There is moreover statistical evidence of the general maintenance of wages in the leading industries of the country. In the last report on Trades Unions, by Mr. Burnett, the labour correspondent of the Board of Trade, there will be found a series of tables, including among other particulars the standard rates of wages for a long period of years in various trades there mentioned.[4] From this I extract the following particulars :—

---

[4] Report on Trades Unions, C–5505, Sess. 1888, pp. 134 *et seq.*

—Comparison of Wages Rates published in the Second Report of the Labour Correspondence of the Board of Trade on Trades Unions.

			Normal, 1866-76.	Maximum, 1873-74.	Latest.
Engineers	(p. 31)	per week	22*s*. to 36*s*.	26*s*. to 36*s*.	26*s*. to 38*s*.
Amalgamated Society of Carpenters and Joiners	(„ 33)	„	20*s*. to 37*s*. 8*d*.	21*s*. to 42*s*. 4*d*.	20*s*. to 42*s*. 4½*d*.
Steam Engine Makers	(„ 35)	„	24*s*. to 36*s*.	26*s*. to 36*s*.	26*s*. to 38*s*.
Iron Founders	(„ 37)	„	26*s*. 3*d*.	26*s*. 6*d*.	24*s*.
United Kingdom Pattern Makers	(„ 45)	„	[33*s*. in 1885]	—	31*s*. 7½*d*.
Operative Bricklayers (summer)	(„ „)	„	20*s*. to 39*s*. 9*d*.	24*s*. to 45*s*. 5*d*.	24*s*. to 42*s*. 4½*d*.
Iron Moulders of Scotland	(„ 47)	per hour	7¼*d*.	7⅛*d*.	7*d*.
Compositors (time only)	(„ 49)	per week	33*s*.	36*s*.	36*s*.
Journeymen Bookbinders	(„ 51)	„	32*s*.	32*s*.	32*s*.
Associated Blacksmiths	(„ 53)	„	25*s*.	27*s*.	28*s*.
Alliance Cabinet Makers	(„ 55)	per hour	7*d*. to 8½*d*.	8½*d*.	8½*d*. to 9*d*.
Operative Stonemasons (summer)	(„ 59)	per week	20*s*. to 37*s*. 2*d*.	18*s*. to 40*s*. –¼*d*.	20*s*. to 40*s*.
Glass Bottlemakers of Yorkshire	(„ 65)	„	33*s*.	36*s*.	30*s*.
Northumberland Miners*	(„ 69)				
Stonemen		per day	4*s*.	7*s*. 5*d*.	4*s*. 8*d*.
Onsetters		„	5*s*.	7*s*. 9*d*.	4*s*. 4*d*.
Banksmen		„	5*s*.	7*s*. 8*d*.	4*s*. 3½*d*.
Putters		„	3*s*. 1½*d*.	5*s*. 1½*d*.	2*s*. 9½*d*.
Kent and Sussex Labourers	(„ 71)	per week	13*s*.	15*s*.	12*s*. 6*d*.
Pressmen	(„ 75)	„	not stated	36*s*.	36*s*.
Zincworkers	(„ 77)	„	36*s*. to 39*s*.	36*s*. to 39*s*.	36*s*. to 39*s*.
Coopers (Leith and Edinburgh)	(„ 81)	„	23*s*. to 25*s*.	27*s*.	27*s*.
United Operative Bricklayers (summer)	(„ 83)	„	23*s*. to 30*s*.	27*s*. to 33*s*.	27*s*. to 36*s*.
Perseverance Society of Carpenters and Joiners	(„ 85)	per hour	not stated	9*d*.	9*d*.
Operative Plasterers	(„ 87)	„	„	6*d*. to 9*d*.	6*d*. to 9*d*.
Co-operative Smiths	(„ 89)	per week	25*s*.	33*s*.	30*s*.
Plumbers	(„ 91)	per hour	not stated	8*d*.	8*d*.
Durham Colliery Enginemen	(., 121)	„	„	5*s*. 11*d*.	4*s*. 4*d*.
Carpenters and Joiners Scotland†					
Aberdeen	(„ 143)	„	4½*d*.	7*d*.	6*d*.
Bishopsbriggs	(„ „)	„	6½*d*.	9*d*.	7½*d*.
Coatbridge	(„ „)	„	6*d*.	8*d*.	6½*d*.
Dundee	(„ „)	„	6*d*.	8*d*.	7*d*.
Edinburgh	(„ „)	„	6¼*d*.	8½*d*.	7*d*.
Glasgow	(„ „)	„	6½*d*.	9*d*.	7½*d*.
Johnstone	(„ „)	„	5*d*.	7*d*.	6½*d*.
Nairn	(„ „)	„	4¼*d*.	6*d*.	5*d*.
Stirling	(„ „)	„	5½*d*.	8*d*.	6*d*.
Friendly Ironfounders	(„ 147)	per week	26*s*. 3*d*.	26*s*. 3*d*.	24*s*.

It would be most desirable to have more details of this sort, but the indication is certainly not that of greatly declining wages of late years when period is compared with period. There are some cases of decline, but on the whole the normal wages of ten or fifteen years ago are maintained. The cases where the decline takes place are mainly in the coal and iron trades, where there was special inflation in 1872-76, and also agricultural labour, where there was also some inflation about the same date; but even in these cases the decline below the average wage as it stood before the inflated years, or even below an average for a long period, including the inflated years, is not very marked. Of course a few exceptions would not alter the general conclusion. Incessant changes are going on in the conditions of different trades and their relations to others. The average wage may be maintained throughout the labouring community, notwithstanding these special declines.

To the same effect are various tables which can be extracted from the bulky volumes of the Trade Depression Commission. I begin with two or three tables put in by Mr. Lord, the President of the Manchester Chamber of Commerce, the last being a summary of longer tables whose construction does not appear logically correct, but which contain data, as far as I can judge, pointing to the conclusion arrived at, although the process by which it is actually arrived at may not appear strictly and logically correct. These tables are as follows:—

F.—*Wages in Lancashire Mills given by Mr. Lord, President of the Manchester Chamber of Commerce.*

[Appendix, Part I, to Second Report of Royal Commission on Trade Depression (p. 377).]

M.—*Cotton Spinning and Weaving.*

Numbers Employed.	Description.	Average Weekly Earnings.														
		1850.			1860.			1870.			1877.			1883.		
		£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
10	Strippers and grinders	–	11	–	–	14	–	–	17	–	1	1	–	–	19	–
16	Rovers	–	7	6	–	11	–	–	11	6	–	19	6	–	18	–
52	Minders	–	18	–	–	18	–	1	2	–	1	10	–	1	9	–
60	Winders	–	8	6	–	9	–	–	11	6	–	14	–	–	12	6
830	Weavers	–	8	2	–	14	9	–	15	6	–	16	–	–	15	–
2	Mechanics	1	1	–	1	4	–	1	6	–	1	10	–	1	10	–
10	Overlookers and tacklers	1	1	–	1	5	–	1	10	–	1	14	–	1	13	–

At the above rates the weekly wages of operatives working a mill of 1,000 looms with requisite spinning, viz.:—

	£	s.	d.
480 persons, amounted in 1850 to	231	3	–
And in 1888 to	403	16	–
Increase........................	172	13	–

= 74·69 per cent.
Increase in 1888 over 1850

In 1850 the great majority of weavers had only two looms each, now they average about three looms each.

N.—*Cotton Spinning and Weaving, Medium Quality.*

Numbers Employed.	Description.	Male or Female.	Average Weekly Earnings.														
			1850.			1860.			1870.			1877.			1888.		
			£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
10	Strippers and grinders	M.	–	10	6	–	13	–	–	16	–	–	19	–	1	1	–
16	Rovers	F.	–	7	6	–	11	–	–	14	–	–	17	–	–	18	–
50	Throstle spinners	F.	–	7	6	–	10	–	–	13	–	–	15	–	–	15	–
25	Minders	M.	–	16	–	–	18	–	1 1	– to 2	– –	1 1	5 to 8	– –	1 1	5 to 8	– –
60	Winders	F.	–	7	–	–	8	–	–	11	–	–	16	–	–	16	–
350	Weavers	M. & F.	–	11	2½	–	14	6	–	17	–	–	18	–	–	19	8½
2	Mechanics	M.	1	3	6	1	5	–	1	7	–	1	8	–	1	12	–
10	Overlookers and tacklers	M.	1	2	–	1	5	–	1	10	–	1 1	14 to 16	– –	1 1	16 to 18	– –
1	Stonemason..........................	M.	1	–	–	1	3	–	1	8	–	1	10	–	1	10	–
2	Labourers	M.	–	12	–	–	15	0	1	–	–	1	2	–	1	2	–

At the above rates the weekly wages of operatives working a mill of 1,000 looms with requisite spinning, viz.:—

	£	s.	d.
526 persons, amounted in 1850 to	282	13	11
And in 1888 to	513	16	5
Increase	231	2	6

= 81·75 per cent.
Increase in 1888 over 1850.

In 1850 each weaver tented on the average 2·74 looms.
" '88 " 3·88 "

G.—*Summary of Tables showing Increase of Wages given in several Trades in Lancashire, given in by Mr. Lord, President of the Manchester Chamber of Commerce.*

[Appendix to First Report of Royal Commission on Trade Depression, p. 99.]

Description.	Percentage Increase in Wages Earned in the undernoted Years on those Earned in 1850.			
	1860.	1870.	1877.	1883.
Cotton spinning and weaving, medium	16·85	43·59	64·47	74·72
„ fine	Unchanged	9·68	30·21	16·27
„ and weaving, fine, Bolton	„	15·13	37·72	35·16
„ No. 150 weft	No returns			37·00
Bleaching	33·06	31·40	56·60	50·00
Calico printing	8·00	25·00	50·00	50·00
Shipping warehouse	15·46	25·77	31·44	35·05
Mechanical engineering	Unchanged	2·42	12·73	10·30
Coal mining	22·78	24·64	55·64	43·53
Building	10·12	23·11	48·21	39·76
Average advance	11·70	22·30	43·00	39·18
	9 trades	9 trades	9 trades	10 trades
Iron manufacture, decrease	8·71	11·98	10·16	14·88

(Signed) GEORGE LORD,
President.

Manchester Chamber of Commerce,
May, 1883.

Thus it seems to be demonstrated that in the leading industries of Lancashire, comparing a date two or three years ago—since which there has been no fall in wages—with a middle period in the wages course between 1865 and 1875, there is not only not a fall in wages, but even a rise. The details in M and N fully show this, and give the necessary strength to the above summary of more detailed tables, which it would occupy too much space to quote.

To the same effect is a record of wages paid at Newcastle in the chemical trade, laid by Mr. Allhusen before the Commission, and which happens to be in a very convenient form for showing the facts.

H.—*Record of Wages Paid at the Newcastle Chemical Works from* 1840 *to end of* 1885.

[Statement of Mr. Allhusen. Appendix to Third Report of Royal Commission on Trade Depression, p. 307.]

Record of Wages Paid at the Newcastle Chemical Works from 1840 *to end of* 1885.

Years.	Blacksmiths.		Millwrights.		Bricklayers.		Joiners.		Labourers.
	Per week.		Per week.		Per week.		Per week.		Per week.
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	
1840	20	–	21	–	20	–	18	–	12*s.* to 13*s.*
'50	22	–	23	–	22	–	20	–	14*s.*
'55	24	–	25	–	24	–	22	–	14*s.* to 15*s.*
'60	26	–	27	–	29	–	24	–	16*s.* ,, 18*s.*
'72	28	–	30	–	22	–*	28	–	20*s.*
'73	32	–	32	–	32	–	32	–	20*s.* to 22*s.*
'74	32	–	32	–	32	–	32	–	22*s.* ,, 24*s.*
'75	32	–	32	–	36	–	36	–	20*s.* ,, 22*s.*
'76	32	–	32	–	36	–	36	–	22*s.* ,, 24*s.*
'77	30	6	30	6	34	–	34	–	20*s.* to 22*s.* 6*d.*
'78	28	–	28	–	30	–	30	–	18*s.*
'79	26	–	26	–	28	–	28	–	17*s.*
'80	27	6	27	6	29	6	27	6	18*s.*
'81	30	–	30	–	29	6	29	6	18*s.*
'82	30	–	30	–	29	6	29	6	18*s.*
'83	31	6	31	6	29	6	29	6	18*s.*
'84	31	6	31	6	29	6	29	6	18*s.*
'85	27	6	28	6	28	–	28	–	18*s.*

Note.—Up to year 1871 a week's work consisted of 61 hours; from that period, 54 hours.

* *Sic* in original; but ought not the figure perhaps to be 32*s.*?

To the same effect is a similar table put in by Sir J. Lowthian Bell as to coal mining, though here the short period of inflation in 1873-74 is very distinctly marked, and the normal rates of wages before and after that date are in this case not distinctly marked:—

I.—*Earnings of Coal Hewers in Durham.*

[Statement of Sir J. Lowthian Bell. Appendix, Part I to II. Report of Royal Commission on Trade Depression, p. 341.]

Year.	Weight of Coal Worked.	Daily Earnings.		Year.	Weight of Coal Worked.	Daily Earnings.	
	cwts.	s.	d.		cwts.	s.	d.
1871	83·87	4	5·67	1878	90·00	5	0·55
'72	76·03	5	7·40	'79	74·63	4	4·42
'73	71·96	8	3·54	'80	91·96	4	3·73
'74	70·80	6	10·65	'81	94·79	4	10·20
'75	70·14	5	9·13	'82	107·74	5	2·57
'76	78·64	5	10·16	'83	107·21	5	3·53
'77	86·96	5	3·9	'84	106·96	5	1·27

Putting all the evidence together, there seems little doubt that in staple trades wages have been maintained, or nearly so, as compared with the average of 1867-77. There are exceptions, but not sufficient to obscure what the general movement has been.

To be quite fair it may be useful to conclude this review with a table of agricultural labourers' wages, in which, as already referred to in connection with the figures from the Trade Union Report, there is apparently a decline, at any rate from the high level of 1872-76. The table in question was put in before the Royal Commission on Trade Depression by Mr. Druce, who had been one of the Assistant Commissioners of the Royal Commission on Agriculture some years before, and is as follows:—

Rate of Money Wages of Ordinary Agricultural Labourers, 1870-71, *and* 1880-81. *Statement of Mr. S. B. L. Druce.*

[Appendix to 3rd Report of Royal Commission on Trade Depression, p. 296.]

APPENDIX A.—II.

K.—*Statement put in by Mr. S. B. L. Druce.* (See Question 9,153.)

Rate of Money Wages of Ordinary Agricultural Labourers in the Years 1870-71 and 1880-81.

Name of County.	1870-71.	1880-81.
	Per week.	Per week.
Beds	10*s*. to 11*s*.	12*s*. to 13*s*.
Berks	10*s*.	11*s*. „ 13*s*.
Bucks*	11*s*. to 13*s*.	13*s*. to 14*s*., winter 14*s*. to 15*s*. summer
Cambs†	10*s*. „ 12*s*.	12*s*. to 13*s*.
Chester	12*s*. „ 15*s*.	No general return
Cornwall	11*s*.	14*s*. to 15*s*.
Cumberland	15*s*. or 9*s*.‡	18*s*.
Derby	14*s*.	15*s*. to 18*s*.
Devon	8*s*. 6*d*. to 12*s*.	11*s*. „ 15*s*.
Dorset	8*s*. 6*d*. to 11*s*. 6*d*.	10*s*. „ 12*s*.
Durham	15*s*. to 17*s*.	17*s*. 6*d*. to 18*s*.
Essex	10*s*. „ 12*s*.	12*s*. to 13*s*.
Gloster	9*s*. 6*d*. to 12*s*.	12*s*. „ 15*s*.
Hants	10*s*. to 11*s*.	11*s*. „ 13*s*.
Hereford	9*s*. to 10*s*.	12*s*. „ 14*s*.
Herts	10*s*. 9*d*. to 11*s*. 3*d*.	12*s*. „ 15*s*.
Hunts	11*s*.	12*s*.
Kent (extra Metropolitan)	13*s*. to 15*s*.	15*s*. to 18*s*.
Lancaster	15*s*. or 7*s*.‡	17*s*. „ 18*s*.
Leicester	12*s*. to 14*s*.	11*s*. to 12*s*. ordinary districts 14*s*. „ 15*s*. ironstone „
Lincoln	13*s*. 6*d*.	13*s*. 6*d*. to 15*s*.
Middlesex	No return	15*s*. to 16*s*.
Monmouth	11*s*. to 16*s*. 6*d*.	12*s*.
Norfolk	10*s*.	12*s*. to 13*s*.
Northampton	11*s*. to 12*s*.	13*s*. „ 14*s*.
Northumberland	15*s*. „ 18*s*.	15*s*. „ 18*s*.
Notts	12*s*. „ 14*s*.	13*s*. to 15*s*. ordinary 18*s*. to 20*s*. colliery district
Oxon*	10*s*. „ 13*s*.	11*s*. to 15*s*. 6*d*.
Rutland	12*s*.	No return
Salop	10*s*. to 12*s*.	12*s*. to 14*s*.
Somerset	10*s*. „ 11*s*.	11*s*, „ 15*s*.
Stafford	13*s*.	12*s*. „ 15*s*.
Suffolk	10*s*. to 12*s*.	12*s*. „ 13*s*.
Surrey (extra Metropolitan)	13*s*. „ 14*s*.	14*s*. „ 16*s*.
Sussex	11*s*. „ 13*s*.	12*s*. „ 15*s*.
Warwick	11*s*. „ 12*s*.	12*s*. „ 16*s*.
Westmoreland	14*s*. „ 17*s*.	18*s*.
Wilts	9*s*. 6*d*. to 11*s*.	11*s*. to 13*s*.
Worcester	10*s*. to 12*s*.	13*s*. 6*d*.
Yorks (E. R.)	No return	15*s*.
„ (N. R.)	12*s*. to 15*s*.	16*s*. to 17*s*.
„ (W. R.)	13*s*. 6*d*. to 17*s*.	15*s*. „ 18*s*.

---

* Extracted from the Report of the Commissioners on the Employment of Women and Children in Agriculture, 1867-68.

† For quarter ended Michaelmas, 1869 (harvest money not included).

‡ The latter with board and lodging.

Google

From this it is evident that the fall in agricultural wages recently which has undoubtedly taken place, can hardly have been very great from the normal average of 1867-77, as marked by the wages of 1870-71 included in the above table, but must have been from the high level of 1880-81, to which they had risen in the interval. This is evidently the case, in fact, if we look at the figures for agricultural labour in the above Trades' Union Table E. Even agricultural labour cannot be said to have sustained a material fall from the high average of 1867-77, though there is a distinct decline from the maximum of those years.

While revising the proofs of this paper, I have had the advantage of receiving a copy of Major Craigie's most valuable paper on the Agricultural Labour Bill read at the Farmer's Club on the 10th instant. Major Craigie's conclusion is that at the present time, as compared with ten years ago, the drop in that part of the labourer's wage paid in money is from 18 to 20 per cent. in the east, and in the rest of England about 12 per cent. He adds that as the numbers of labourers are about $\frac{5}{7}$ths of the whole in the latter districts, perhaps a drop of 14 per cent. will represent the loss of wages over the farmed surface of England. But this is comparing the present time with the high level ten years ago, and the average drop would of course be less comparing ten years' period with ten years' period. Major Craigie at the same time gives most interesting tables showing the real improvement in the labourer's position notwithstanding the fall in money wages, which confirms in the strongest way the present argument that the appreciation is a case of appreciation measured by commodities in an advancing community, so that money incomes, though just maintained, or not quite maintained, go further than they did before.

It would be needless to multiply figures. The common impression as to wages having been maintained, while the prices of commodities have fallen, is not only confirmed by the proof above given as to income tax incomes having been maintained, and by the statements of numerous observers with special means of knowing, but by actual tables of wages statistics derived from a variety of sources, and all telling the same tale. The appreciation of money, therefore, as far as England is concerned, is an appreciation unaccompanied by any serious general decline in average incomes and wages per head, much less by any decline in the aggregate national income.

It should be added, however, that the maintenance of individual incomes at the former average level has at most been barely accomplished, and no more. The appreciation has very nearly, if not quite, been one of the second type, viz.: where not only prices of commodities fall, but where average incomes expressed in money decline.

It is not necessary for confirmation's sake to go abroad, but it may be useful to do so, while the facts cannot but throw light on the further question, which is a most interesting one, as to the area of the appreciation.

As regards Germany, I have only to refer to Dr. Soetbeer's "Materialien," from which I extract and place in the Appendix certain particulars as to wages and incomes. Dr. Soetbeer uses these very particulars to disprove the assertion that gold has appreciated, but this is with reference to the peculiar meaning or no meaning of the word which has been productive of so much confusion in all these discussions. We are at liberty to use the same particulars to demonstrate the character and degree of the appreciation as we have limited and defined the phrase.

With regard to Belgium the figures are contained in a blue book issued last session,[5] compiled from an inquiry into the wages and condition of the working classes, which has just been made by the Belgian Government. From this blue book I have compiled and put in the Appendix one or two short tables. The figures certainly show a fall in the iron and coal trades, but not a general fall at the present time as compared with the average of 1867-77. I desire to refer especially to the table in which the wages are directly compared with the quantities purchaseable at the average prices of the years in question. This is the most direct way of course of putting the rise in real wages. Whatever the intermediate changes in money have been, and although they are no higher at the end than the beginning, their purchasing power has been immensely increased.

Similar particulars for France yield the same conclusion, the difficulty here being to show any general decline. I do not make any extracts, however, and may content myself with a reference to the elaborate particulars at p. 132 *et seq.*, Appendix, Part II, Second Report of the Royal Commission on Trade Depression.

Similar particulars for Italy are to be found in the Report of the Royal Commission on Trade Depression. To corroborate them I extract and put in the Appendix an extract from a report by Mr. Kennedy, lately Secretary of Legation at Rome, which appears to be conclusive on the point.

Thus the phenomenon of falling prices of commodities and stationary or, at least, not greatly declining incomes and wages, appears to be very general in gold-using countries. It does not follow that the result should be the same in every country. We cannot assume the rate of advance in material progress to be the same in each, or that the margin between the average prices of commodities and the average income should widen in the same way. But although the same result precisely is not to be looked for, if we could measure with the necessary degree of fineness, we cannot but assume that the communities of all the countries named are progressing to some extent, and that consequently, if commodities fall and incomes remain stationary in one, the same results should appear in the other with only minor divergencies. When we find, therefore, that everywhere in Europe at least, wages and incomes remain stationary, or at least fall much less than the average prices of commodities, we cannot but conclude that the type of appreciation is everywhere the same, and that we are in the presence of a phenomenon which extends over a wide area—that phenomenon being an undoubted rise in the purchasing power of money measured by commodities, but this rise being unaccompanied by any corresponding diminution of wages and incomes which would not unnaturally be looked for, but which reflection shows need not take place in advancing communities when prices fall.

---

[5] See C–5269, Sess. 1888.

The Appreciation or Depreciation of Silver.

The appeciation of gold measured by average commodities being thus established, and the appreciation being of a type in which, as the communities affected are advancing at the same time in material wealth, there is no diminution, or at any rate no great diminution, of average incomes, the question arises, what are the similar facts respecting silver?

Of course, as regards the relation of silver to commodities, there can be no question. In each case, whatever fall in the gold prices of commodities is shown, would either be less or more than the fall in the gold price of silver by an exact percentage. There is no room for theorising. It is a case of exact measurement, with this difference only, that silver and gold can be measured against each other with more exactness than any other commodity against one or the other.

It would seem to follow also that on the whole, if we avoid extreme years, the average fall in commodities measured by gold rather exceeds the average fall in silver measured by gold. In other words, instead of speaking of the depreciation of silver, though that is a correct enough phrase when we measure it by gold, we should be quite justified in speaking of the appreciation of silver when we measure it by the average of commodities in the way above described.

This is true when we measure silver in gold using countries, but what is true there, a little reflection will show, must also be true in silver using countries. In these days of quick communication it must be assumed that every improvement is for the benefit of consumers generally in the long run, though there may be important exceptions for a time when a backward country is first brought into contact with the rest of the world, and all its produce obtains an enhancement of value. Still the latter cases are exceptions, and it may be taken for granted that a rise or fall in prices in one locality, if at all general, is accompanied by a similar rise or fall throughout the world. I assume then that silver has appreciated a little, measured by commodities, in those countries at least which, like India, are in close and intimate intercourse with the civilised world. If necessary the exact correspondence between Indian and European prices could be shown, but it does not seem worth while to labour the point.

But to what type does the appreciation of silver conform in India? Clearly, if the community of India had been advancing as European communities, and especially the community of the United Kingdom, have been advancing, there would be a material difference in the growth of incomes in India and England respectively. Silver prices having fallen very little compared with gold prices, then, in an advancing community using silver, money wages and incomes ought to have risen in order that wages and incomes may maintain the same relation to commodities that they do in advancing gold countries, where, as we have seen, wages and incomes remain stationary while prices fall. The one change would be the exact counterpart of the other. But, so far as I have been able to learn, no such increase in Indian wages and incomes has, in fact, taken place. On this head I can only accept the statements of Indian authorities, and Mr. Barbour, who is in the best position to be an authority, is quite explicit on the point. In his evidence before the Royal Commission on gold and silver, he was asked by the Chairman (Question 1162) whether, with respect to labour, the value of silver had decreased in India, and he replied :—

" I think that the wages of labour have risen in large towns, " and along the railways, and in places where large manufactures " have been started, and especially the wages of skilled labour. " As regards the great mass of the people, I do not think there " has been much change; and very often the labourer is paid in " kind (paid by produce), so that one could not say that the money " wages had risen or fallen. I have made some inquiries as to the " cost of carrying the mails by runners. I applied to the head of " the post office, who obtained from the auditor of the post office " accounts a statement of the wages paid to what are called postal " runners, and I found very little change in the rates. I will put "in a paper giving those rates: it goes back for a considerable "number of years. There is a rise in the rates up to, I think "about 1870 or so, and since that there has been very little change— "a slight tendency to rise."—("First Report of Gold and Silver "Commission," Question 1162, p. 60.)

Nothing more need be said, but I may add that I am led to believe from conversation with residents in India who are shrewd observers, that the authorities are right. There has been no general or material rise in wages and incomes in India in the last ten or fifteen years. What I believe has occurred is a rise of wages in the large cities of India and in some districts near the gold mines, not sufficient to affect greatly the general average. The conclusion consequently is not that the facts as to appreciation of gold in Europe measured by commodities, and as to a less appreciation of silver in India measured by commodities, implying a depreciation of silver measured by gold, are out of harmony, but that India, as a community, has not of late been advancing as European communities have advanced. Hence the absence in India of many of the usual phenomena of depreciation of money, though some of them must have accompanied an increase of wages and incomes in India, such as would undoubtedly have taken place of late if India had been an advancing community, although the silver prices of commodities had fallen a little.

I make these observations with some diffidence, and in the absence of fuller information, which is much to be desired, as to prices and wages in India. It would be most interesting to know, on its own merits, how much the people of India have been gaining in material wealth of late years. It appears somewhat remote to bring in the relations between gold and silver prices and gold and silver wages as having a bearing on this point, but with good statistics the topic should be in no way remote.

Similar statements, it may be noticed, are made by consuls of the United Kingdom in silver-using countries, in reply to the wages query of the Royal Commission on Trade Depression contained in the circular sent to H.M.'s representations abroad by that body. From Mexico, from China, from Japan, or at least from many places in those countries, and from other countries also, the report is that there has been no noticeable rise of wages for twenty years, or since 1870. From Russia and Austria, which are paper countries, but with little discount, or no discount, on the paper compared with silver, there is much the same reply.

The inference as to the slow growth of silver using communities as compared with that of gold using communities is a specially important one, as we shall afterwards see. It bears upon the question of the future demand for gold compared with that of silver. For the present purpose, however, I am using it merely to show the nature and extent of the depreciation of silver. It can hardly be spoken of anywhere as a depreciation at all, even when the measure is the income per head of a community, and there is obviously no depreciation, but appreciation only, when the measure is that of the average of commodities.

At this point we may notice what was adverted to in the opening remarks with reference to the puzzle caused by there being no phenomena of depreciation of silver in India answering exactly to its depreciation measured by gold in Europe. Clearly the correspondence cannot be exact, because the economic movement in India and in Europe is not the same. The difference accounts, especially, I think, for that most curious puzzle of all, which seems so insoluble, viz., the slowness with which wages adjust themselves in England and India to the changed ratio between gold and silver, so that the Indian producer who has no more wages to pay, while his produce commands relatively more silver than the produce of the English producer commands of gold, in comparison with what was formerly the case, appears to have a permanent advantage over the English competitor. Clearly if real wages are rising in England generally more than they are in India, wages here may not apparently be adjusted to this specific change, because along with the apparent adjustment required another change has to be adjusted, viz., the increase in real wages. Thus the English producer appears to be more and more handicapped by his Indian competitors, because he cannot get money wages down. If, however, there had been no fall of prices and no fall in silver, this difficulty would have been the same, only it would have taken the form of *rising* wages here with prices stationary, instead of the form of stationary wages and falling prices. Always the real changes must have been the same. The change, however, implies no insuperable difficulty in the English competition maintaining itself. Real wages increase because the work done is better generally, and though there may be momentary difficulties in special trades, always this improvement in work will tell.

The facts as thus described also appear to account for the extent of the recent flow of silver to the East, on which there appears to be some misconception, and on which I may be allowed to say something, as the name of a revered authority, Mr. Bagehot, whom I am specially bound to defend, has been brought into question. Mr. Bagehot, it is said, when the depreciation of silver measured by gold began, discouraged a panic feeling by predicting a great export of silver to the East, and a continual demand for silver as it fell in value, so that unlimited depreciation was not in

Google

prospect. The event, it is said, has belied his prediction, and shows that his appeals against panic were not well founded.

I remember no conversation with Mr. Bagehot having the purport stated, and I was in close communication with him till he died. What he was always speaking of was a sudden depreciation of silver such as took place in 1876, when the market fell away suddenly to 3*s.* 11*d.*, and of this he predicted that it would speedily right itself by stimulating exports of goods from India, and so creating a demand for silver for export to India. In this Mr. Bagehot was undoubtedly right. Indian trade was stimulated, and there was a large export of silver from Europe to India immediately after Mr. Bagehot made his statement as to what was going to happen, while the price of silver recovered to over 4*s.* 6*d.*, and only fell very gradually after that for a good many years until in 1886, another fall occurred such as Mr. Bagehot wrote of in 1876. Mr. Bagehot by no means predicted that silver would go back to its ancient level, nor was any such idea in his mind. He was the last man in the world to discount the future or to take very long views.

Since Mr. Bagehot died, however, the circumstances relating to both silver and gold have very greatly changed, and I am tolerably confident that he never said anything to imply a belief that the stimulus to Indian trade, which he anticipated from a momentary great drop in silver, would be permanent and continuous in totally different circumstances. The new circumstances are what economists would recognise as rather an appreciation than depreciation of silver, and this aspect of the fall in silver was certainly not so visible before 1877 when Mr. Bagehot died as it has since become.

I have further to point out that the flow of silver to India of late years has in fact been on a considerable scale. Since 1877 the influx into India in tens of rupees has been:—

Net Imports of Silver into India by Sea in the undermentioned Years.

[In thousands of tens of rupees.]

Year ended 31st March,	Imports.	Exports.	Net Imports.
1874	4,143	1,648	2,495
'75	6,052	1,410	4,642
'76	3,464	1,909	1,555
'77	9,992	2,798	7,199
'78	15,776	1,100	14,676
'79	5,594	1,623	3,971
1880	9,605	1,735	7,870
'81	5,316	1,423	3,893
'82	6,466	1,087	5,379
'83	8,358	878	7,480
'84	7,408	1,003	6,405
'85	9,110	1,864	7,246
'86	12,386	780	11,606
'87	8,220	1,064	7,156
'88	—	—	9,219

And I maintain these are large figures. They would hardly have taken place unless there had been some increase of wages and incomes in India, though, as we have seen, there is no large general increase of such wages and incomes. India remains a consumer of silver on a large scale. No doubt for many years, owing to the great advance in prices and wages which took place in India between 1850 and 1870, India was a consumer on a still larger scale, just as England was a large consumer of gold for monetary purposes in the same years; but while in the last fifteen years England has ceased to be a consumer of gold, India remains a large consumer of silver. The difference arises in part, I believe, from the fact that, while gold has appreciated greatly, measured by commodities, and gold incomes have not increased, silver has appreciated only a little, measured by commodities, and silver incomes, though silver using communities have not advanced as gold using communities have done, have nevertheless advanced a little.

I have to apologise for this digression as to the flow of silver to the East, but my excuse must be the expediency of showing that all the facts, when rightly understood, are in harmony. The flow of silver to India should be in strict relation with the degree and nature of depreciation in its money and the economic progress of its inhabitants.

Characters of Appreciation and Depreciation at Different Periods.

Making the broad distinction we have made between the course of prices and incomes, it may be useful to look at what happened in previous periods of appreciation or depreciation, and see how they may be characterised with reference to this distinction. A good deal of light seems to be thrown on the subject by so doing. Much doubt is removed as to when there has been appreciation or depreciation.

We may take first the period following the Australian and Californian gold discoveries. Mr. Jevons showed for this period an appreciation of money, measured by staple commodities in England, amounting to about 15 per cent. As you are aware, however, the statement was not universally accepted as representing the change in prices of commodities generally; and still retaining the confused idea as to appreciation being something absolute and independent, which is so difficult to get rid of, economists argued that Mr. Jevons had not made out his case. I have been told myself that because I agreed that the limit of the depreciation measured by commodities in the twenty years after 1850 was a very narrow one, I must admit that the subject is extremely difficult, and we may equally conclude now that appreciation is not estab-

Google

lished with any certainty! When we bring in the question of incomes, however, the character of the period which Mr. Jevons described is placed beyond all question. If the margin of the rise in the prices of commodities was a narrow one, the rise in incomes and wages was immense. As to income tax incomes, the facts are notorious. The income tax income per head of the people of the United Kingdom, which was about 11*l.* just before 1850, amounted about 1875 to over 17*l.* There is reason to believe moreover that the growth of working class incomes corresponded, on which head I may be allowed to refer to the papers on the "Progress of the Working Classes" which I read to the Society in 1883 and 1885.[6] The case between 1850 and 1870 therefore was one in which there was a moderate depreciation of gold measured by commodities, but as the community was advancing in real wealth at the same time the improvement in its condition was indicated by the larger growth in incomes than in the prices of commodities. Scientifically stated then, there was unquestionably depreciation between 1850 and 1870; the depreciation being that characteristic of an advancing community, when prices of commodities rise a little, and incomes rise a great deal.

Looking at the matter broadly the difference between that period and the later period since 1873 may simply be described as being that while the increase in real wealth in the two periods was much the same, the community received the benefit in the former period in the form of a great rise in money incomes accompanied by a much less rise in commodities, and in the latter they have received the benefit in the form of stationary and almost slightly declining incomes, accompanied by a great fall in the prices of commodities. The facts are all in harmony. The substantial result to the community, apart from the redistribution of wealth involved, is the same in both periods, but the money expressions and the changes in these money expressions are different.

Going back a little further, again, it is easy to see that the period between the early part of the century and the eve of the gold discoveries of 1848-50 was one of great likeness to the present period since 1873. In both there was the same steady fall of general prices, a fall which has long been recognised, in spite of the unwillingness of many economists, such as Tooke, to speak of it as a rise in the purchasing power of money. Now we must add that there is a farther likeness in the circumstance that between the early part of the century and 1845 average money incomes increased very little. Nothing is more remarkable than the small advance of income tax incomes between the date when the income tax was left off in 1815 and its renewal in 1843, there being in fact no advance, or barely any advance, allowing for the increase of population. It is equally on record, though there are no exact statistics, that money wages during the same period were with difficulty maintained. Hence the general likeness between the period 1815-45 and the present time. Appreciation of money shows itself in both periods in much the same way, and is of much the same type, though I am inclined to think that the advance in real wealth before 1845 was not so great as it has since been.

---

[6] See Statistical Society's *Journal*, 1883 and 1885, and "Essays in Finance," 2nd series, pp. 364 *et seq.*

Going back still further, it will be found that towards the close of last century, and during the early part of the present century, there was a remarkable rise of prices, and an equally remarkable, if not more remarkable, rise of incomes, indicating that, on the whole, the community was then advancing. In thus speaking, I leave out, of course, that part of the rise of prices and incomes which answered to the depreciation of paper. Apart from this element, there was a great rise in prices and incomes in the last quarter of last century and the beginning of the present century, though rather more in incomes than in prices. The data are too scattered to enable us to speak with much exactness, and it would take us too far at present to go into historical investigations; but that there was at the time spoken of depreciation of money, measured by commodities, such as we had between 1850 and 1870, is undoubted, and there was at least sufficient advance of incomes to raise a question whether the whole change was not of the same type, though the *degree* of advance in real wealth was not nearly so marked as in the period 1850-70.

It is not proposed to go back any farther at present; but enough has perhaps been said to show how fruitful such investigations may be made when the relations between prices and incomes are kept steadily in view, and how necessary it is to allow for the economic movement in a community in studying the signs of appreciation or depreciation of money. The apparent inconsistencies between a fall of prices and no fall of wages, or no corresponding fall, and *vice versâ*, are all to be reconciled. When this is done there can be no sort of doubt as to the changes in the purchasing power of money at different times in the last hundred years.

Equally when we turn to another field the utility of the comparison is shown. In India, as we have seen, since about 1873, there is notably no depreciation of silver measured by commodities; there is perhaps a slight appreciation. There appears also to be a slight increase of incomes, though not much. Just before 1870, however, there was unquestionably depreciation of silver in India, marked by a rise of both prices and incomes, and a little more in incomes than in prices. In India the real progress in both periods has been less than in Western Europe, but the facts again are all in conformity. As the community advances, though somewhat slowly, depreciation of money measured by commodities is accompanied by a greater increase in money incomes than in the prices of commodities. On the other hand a stationary value or slight appreciation of money measured by commodities is accompanied by stationary or only slightly rising incomes.

This characterisation of the various sorts of appreciation and depreciation may be used generally in comparing different countries at different times. The fact of appreciation or depreciation of money is one which must be frequently kept in view in economic comparisons, and the nature and degree of appreciation or depreciation must equally be considered. A study of the economic movement in the chief countries of the world, and in different provinces of the same countries for the last century, if not longer, comparing prices and incomes all through, could not but be most instructive.

A useful explanation with regard to the employment of certain phrases in economic discussions appears likewise to be suggested. We often hear of certain things such as war causing high prices, and other things, such as abundant harvests, causing low prices; and the high prices are spoken of as "dearness," and the low prices as "cheapness." But when the expressions are analysed it will be found that the "dearness" and "cheapness" can have really nothing to do with money prices; that real "dearness," that is a high price in relation to income, and real "cheapness," that is a low price in relation to income, are intended; while it is further obvious from what has been said here that "dearness" and "cheapness" in this sense may co-exist or come about with any conceivable range of money prices or any conceivable change in that range. Things may become cheap in this sense when money prices rise and dear when money prices fall—not perhaps in a short period, and especially as regards a particular article, money then being the most stable measure, but certainly as regards an average of articles in those long periods when it is found convenient to invent measures for money itself. Much confusion has arisen from the neglect of this distinction. The common notion that war prices are high money prices, which is so inveterate, although it is absolutely disproved by experience as well as by theory, is an instance. Perhaps—to give an illustration from present controversies—the question whether abundance of commodities or scarcity of money causes a given appreciation of money, which we shall presently have to notice, would never have become a question at all, if it had been clearly recognised from the first that the effect of abundance of commodities properly belongs to a question of real cheapness, where the ratio of the commodities to incomes is involved, and that the effect of scarcity of money properly belongs to a question as to the range of money prices only where the ratio of commodities to money is involved, so that there is no antagonism between the two causes as they are not related to the same class of effects.

The Causes of Appreciation and Depreciation.

What are the causes of the changes in money with which we have been dealing? I approach this topic with great diffidence. The changes have been rung, as you are aware, on the antagonism, or supposed antagonism, which has just been mentioned, between the influence of abundant commodities and the influence of scarce money on prices. It has become extremely difficult for a modest student like myself to strike in with a few appeasing words, and show that there is a great deal to be said on the subject which does not touch on the conflict at all, and that the conflict itself is more about words than things.

I would begin by saying that there is, necessarily, ambiguity in asking generally what are the causes of the appreciation of gold or depreciation of silver? There is liability to misunderstanding, as we have seen, in the fact that there may be appreciations and depreciations of quite different types, and what is true of one may not be true of another; but in addition causes are hardly to be treated in this general way when we are dealing with economic phenomena, or indeed with any scientific phenomena. We should hardly ask what are the causes of the sun rising in the east, without limiting the question in some way so as to show what facts are assumed, and where the point as to the rising in the east comes in. In the same way we must limit and define the inquiry as to the causes of appreciation and depreciation of money at one time as compared with another.

I have to begin then by drawing attention to what is stated in the preliminary remarks, to the effect that there must be a sense in which the ascription of every case of appreciation of money to a contraction of money, and every case of depreciation to an expansion, must be true. There must be *relative* contraction and expansion whatever the absolute changes may be; and as there is an incessant action and reaction in all economic phenomena, this means that contraction of money may always be taken as the cause of an increase of the purchasing power of money, in the sense that such an increase necessarily *implies* contraction as compared with what would otherwise be. We may infer the one fact from the other, which is the important point for us, without troubling our heads very much about metaphysical ideas of cause.

Using the words contraction and expansion in this sense, however, a very different view would be taken of the causes and order of the phenomena from what would be taken by anyone attaching a totally different meaning to contraction and expansion, and overlooking the relative nature of the expressions as thus used. Both disputants might be right, but then they would not be talking of the same things.

According to this view, then, as already explained, it becomes convenient, to say the least of it, to treat all the changes, whether in the demand for or supply of money or the demand for or supply of commodities as changes in the circumstances of money, although in discussions where money itself is treated as the measure the same circumstances may be spoken of as changes in the circumstances of the things which money measures. Everything turns on the point of view. Thus, a general and continued fall of prices being proved, and commodities being taken as the measure of money, the circumstances imply a contraction of money as compared with the time just before. Whatever the real changes may have been, and whatever may be the ultimate causes of one thing exchanging at a particular ratio for another, for the purpose of the special inquiry, where money is being measured, the changes must be spoken of as changes in money, and as the purchasing power of money is increased, there is contraction of money.

It would only vary the language a little to substitute for the phrase contraction of money increased cost of production, just as it would be to substitute in the opposite case lowered cost of production, in both cases relatively to commodities. Relative contraction and expansion of money may either be conceived of as causes or effects of changes in the ratio of exchange with commodities; if we conceive of them as effects we should speak of the relative change of cost of production as the cause; but the result is the same so far. It is the circumstances of money we must view as having changed.

It appears to be possible, however, to go farther, and to point out that by comparison, if we attend carefully to the terms of the comparison, we can say positively that the recent change from a high to a low level of prices is due to a change in money, of the nature or in the direction of absolute contraction.

If we look at the matter dynamically, what we find is that over a long period of years the circumstances affecting the two factors in the ratio between money and commodities, viz., money on one side and commodities on the other side, so varied from moment to moment at one time that the ratio remained steady, and so varied at another time that the ratio changed. If at the moment of transition from the steady to the changing ratio it is found that the circumstances of the one factor have not altered dynamically, but that the progress remains what it was before, then it is a proper conclusion that the circumstances of the other factor have altered dynamically, and that the change in the ratio is to be ascribed to the change in that other factor.

This description applies exactly to what went on between commodities on the one side and money on the other from 1850 to 1873, and the change which occurred about the latter year. Before 1873 for rather more than twenty years the circumstances of commodities and of money, supply on one side and demand on the other, were undoubtedly in a state of constant flux, but the movement was such in both cases, the changes so kept pace with each other, that the ratio remained unchanged, or if anything gold fell and commodities rose. About 1873 there was an alteration, but according to the best observation the movement in commodities continued what it had been, the quantity increasing at as great a rate as in the period just before, but not at a greater rate. The inference seems conclusive therefore that after 1873 the alteration in the economic movement was in money, and to this must be ascribed the change of prices which has occurred.

It is only an additional confirmation of this view that actual changes in the movement in money in a direction likely to lead to a fall of prices can be referred to. The argument, on the assumption that the movement in commodities has been correctly described, would be complete, even if we knew less about the changes in money than we do. Whatever may be the qualities or conditions which make money exchange at a particular ratio for a group of commodities, then the changes in those conditions from day to day which made money remain steady in price towards commodities or to fall a little before 1873, must have undergone an alteration in their course about 1873. The effect being different, and the course of commodities being the same after 1873 as before that date, it must have been the course of money that changed.

The actual facts that we find as regards changes in the movement of money before and after 1873 are most striking.

In the fourteen years ending 1871, which was the last year before me when I wrote the paper in 1872 already referred to, the net imports of gold into England, the excess of the imports over the exports, amounted to no less a sum than 67,776,000*l*., viz.:—

Excess of Imports of Gold into the United Kingdom over Exports.

	£		£
1858	10,226,000	1866	10,768,000
'59	4,217,000	'67	7,911,000
'60	−3,057,000	'68	4,428,000
'61	926,000	'69	5,297,000
'62	3,892,000	'70	8,793,000
'63	3,840,000	'71	921,000
'64	3,621,000		
'65	5,993,000	Total	67,776,000

This is an average of about 5,000,000*l.* per annum or nearly so. In the following sixteen years, however, there has been hardly any excess, as the following statement shows:—

Excess of Imports of Gold into the United Kingdom over Exports, 1872-87.

	Excess of Imports.	Excess of Exports.
	£	£
1872	—	1,280,000
'73	1,540,000	—
'74	7,439,000	—
'75	4,493,000	—
'76	6,960,000	—
'77	—	4,932,000
'78	5,902,000	—
'79	—	4,210,000
1880	—	2,374,000
'81	—	5,536,000
'82	2,353,000	—
'83	665,000	—
'84	—	1,269,000
'85	1,446,000	—
'86	—	391,000
'87	632,000	—
Total	31,430,000	19,992,000
Deduct excess of exports	19,992,000	—
Net Total	11,438,000	—

Allowing for the increase of population, the excess of imports in the second period, to correspond to the excess in the first period, should have been very nearly 80,000,000*l.*; actually it has only been 11,438,000*l.*

Whatever evidence there may be about the quantities of gold in the world and in the banks or Government treasuries of other countries, the difference in the amount available or required for the United Kingdom is enormous. As the United Kingdom, it may be added, is and has been practically the only free market, working on the same basis all through, the figures are worth all the others. In the one period then we get nearly 70,000,000*l.* In the other period, when in the same proportion we might have expected nearly 80,000,000*l.*, we got about 11,000,000*l.* only. It is clearly impossible to contend there has been no change in the movement of gold, comparing the one period with the other.

If we looked at coinage or other details, the result would be the same. The stock of gold in England available for money has not been added to of late years as it was in the period just before. The stock with the additions has had to do more work, and it has only been able to do so because prices have fallen, and incomes have not risen, whereas from 1850 to 1873, when gold was going so largely into England, not only did prices rise a little but incomes a great deal.[7]

Of course, however, the special point of view has always to be considered. The comparison is of movements in two periods, and the change in ratio is ascribed to an arrest of the movement in one of the factors which is apparently established beyond all question.

To put the matter into more popular language, we might perhaps say that the stationary or rather rising prices of commodities between 1850 and 1873, although commodities were increasing as much as they have done since 1873, were maintained by continual additions to the stock and efficiency of money. Since 1873 the movement of additions to the stock which was a very pronounced one has been arrested, if there has not been an actual withdrawal from or diminution of stock uncompensated by an increase in the efficiency of money. Consequently the fall of prices since 1873 is explained by the check to the previous movement, when the matter is looked at dynamically and the periods are compared.

The utility of this mode of comparison is also obvious, and it was simply by using it that it was possible to anticipate fifteen and then ten years ago the actual course which prices have since followed. In my paper in 1872 on "the Depreciation of Gold since "1848,"[8] this was exactly the method followed. The real progress of the community at a certain rate was assumed, and then as it appeared probable that the amount of new gold available for an increase of business could not be the same as before, but was likely rather to diminish, the conclusion was that the course of prices would be different from what it had been. The common opinion then was different. It was freely said that as there was so much gold about, there was enough for every purpose, and prices would rise farther. But the method of dynamic comparison, as the event has proved, made a true forecast possible. Again in 1879 it was always the dynamic comparison that was in view. Two passages may be extracted from the paper of 1879 which put the view plainly. First, speaking of the past, I said :—

---

[7] The comparison would be still more striking, I believe, if we could compare the excess of imports of gold from 1850 downwards. But there are no official statistics of gold imports before 1858.

[8] "Essays on Finance," 1st series, p. 82 to 106.

"The peculiarity of the period has been the increase of "mechanical invention and the constant augmentation of goods, "so that the accumulation of capital above shown is even in less "proportion than the increase of the movement in trade which the "money in use has to move. It is a moderate calculation that if "only the countries which used gold in 1848, including their "colonies, were now using it, the requirements to correspond with "the increased population and wealth would be at least three "times what they were, assuming prices to remain in equi-"librium."[9]

Next as regards the future :—

"Let me add that whatever doubt may be entertained as to the "actual meeting of the two curves of demand and supply of gold "during the last few years apart from extraordinary demands—all "the facts and circumstances seem to indicate that the meeting "point must come very soon unless the supply of gold is increased "or economising expedients introduced and extended . . . . "Whether such a change is likely to come in the shape of an "increased gold supply it will be for geologists and mineralogists "to judge, but it is not reassuring to see how little comes "practically of the recent gold discoveries in India and the "re-discovery in Midian. Whether on the other hand change "may come in the shape of economising expedients will be a point "of no little interest for bankers and all other business men, and "for legislators. Considering the slowness with which such "expedients become effective when they are first introduced, and "the perfection to which they have been brought in countries "like England where they are introduced, I feel great doubts "whether much relief can come in this way. On the whole, I "see no other outlet from the situation than in the gradual "adjustment of prices to the relatively smaller and smaller supply "of gold, which must result from the increasing numbers and wealth of the population of gold using countries."[10]

I spoke to much the same effect in a few words following on Mr. Goschen's address to the Bankers' Institute in 1883. "If it is "found," I said, "that the annual supply of gold, now that the transi-"tion period may be considered over, is not sufficient to maintain "things in what we may call an equilibrium, that there is a

---

[9] "Essays in Finance," 1st series, p. 336.

[10] "Essays in Finance," 1st series, pp. 338 and 339.

"constant increase in population and in the resources of mankind "from time to time going on, and the supply of new money is not "quite equal to keep things at an equilibrium, then we may have "a long-continued fall of prices from generation to generation, "and this will probably have very great effects as time goes on. "We may perhaps have what may be called a permanent "transition period, as far as I can see."

Thus the idea of a dynamic equilibrium has always been in my mind as the basis of any comparison between period and period, and I must maintain it, especially after the event, to be a useful method of comparison. In any case you must define your idea of an equilibrium at starting, or you can have no clear notion of the facts at all.

It would perhaps be possible to leave the discussion at this point. If the dynamic comparison here made is useful, partly for forecasting the future course of prices, and partly for explaining generally the relations of money, commodities, and incomes to each other when prices change, then it is a comparison which ought to be made, whatever else is done or omitted. It carries us a long way in the investigation. So much is said, however, about other comparisons, especially about the abundance of commodities causing the fall of prices and not the contraction of money, that at the risk of burdening myself with controversy I propose to add a short criticism on this discussion.

Clearly the suggestion already made that the two causes are not on the same plane—abundance of commodities properly belonging to a question of real cheapness, while scarcity of money belongs to a question of money prices only—covers the whole ground. But the point need not be pressed. The argument from the abundance of commodities may be demonstrated to be faulty in other ways.

The question immediately arises, looking at the whole course of the discussion, whether those who insist so much on the increasing abundance of commodities as excluding any idea of the contraction of gold are not really attempting the impossible, viz., to measure two variables, one against the other, without a third common measure by which to try them. We know, however, so little of the ultimate facts which regulate the ratio of exchange between particular commodities, that it would be useless to determine, except in a comparative and limited manner, what are the facts which change at a given time, and how one commodity may exchange for less than before, although it may be produced in smaller quantity; another for more than before, although it may be produced in greater abundance; and although it may be true generally in theory that increase of supply means a lower rate of exchange for the article supplied, and a less supply a higher rate of exchange. The concrete facts are in truth infinitely difficult to follow out, and no one should attempt to do so without limiting his quest in some way.

When, therefore, abundance of commodities is pitted against scarcity of money in the way that is sometimes done, I confess my inability to follow the discussion at all. I seek in vain for the exact terms of the comparison—the definition of the equilibrium which is the starting point of the comparison, and a description of the changes as from this equilibrium. The whole discussion is bewildering to a degree.

I would say, however, though it is not quite safe to speak in the absence of all clear definitions by the disputants themselves, that the contention that the recent change in prices or in the purchasing power of gold is to be ascribed rather to the increasing abundance of commodities than to any contraction of money, is obviously, as far as it has any reason at all, based upon an attempt at a totally different comparison from the one which we have now made. For the purpose of this comparison the quantities of commodities and money, or the conditions of their production, or whatever determines the ratio between them, are assumed to be in a state of rest just before the change in prices occurs—a statical and not a dynamical equilibrium is assumed;—and as it is found that commodities go on increasing, and there is no actual diminution of money from that point or very little, the subsequent change in prices is ascribed to the change in commodities. But whatever may be thought of the validity and usefulness of such a comparison, what I have to submit is that it is obviously, and by the terms of it, a totally different comparison from what is attempted when the two periods are looked at dynamically and a dynamic comparison attempted.

The difference between the two comparisons can be illustrated very simply by diagrams, which show at a glance that those who argue for abundance of commodities as causing the recent fall of prices, start from an assumed equilibrium of rest at the date when the fall began, while the comparison which asserts a change in money is really a dynamic comparison.

The first diagram, it will be seen, shows commodities and money both increasing from 1850 to 1873, and the ratio between them remaining steady; there was in truth a moderate rise of prices, but it would complicate the diagram to show this; after 1873 commodities went on increasing as before, but there was a check to the increase of money, and hence the fall of prices is ascribed to this check to the increase of money. This was the change that took place in 1873 or thereabouts. The recent fall of prices,

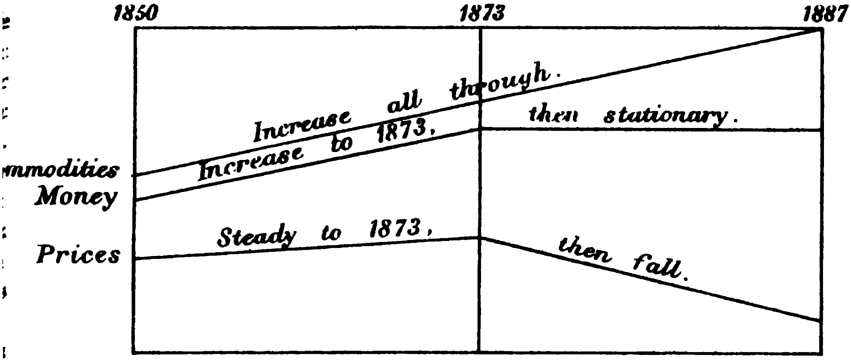
DIAGRAMS.

ILLUSTRATING DIFFERENT COMPARISONS AS TO THE CAUSES OF THE RECENT FALL IN PRICES.

1st DIAGRAM

CHANGE IN MONEY VIEWED AS CAUSE OF CHANGE.

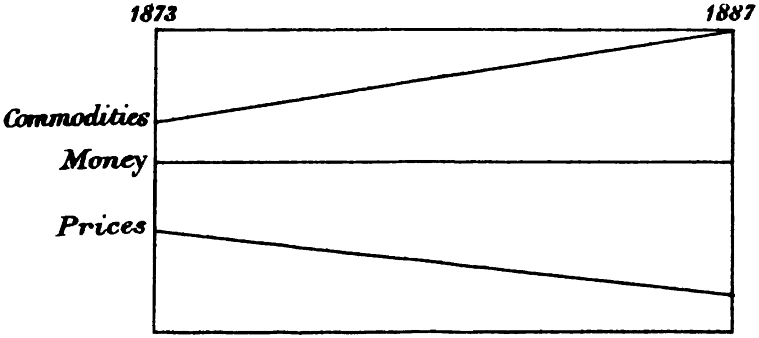
DYNAMIC COMPARISON.



2nd DIAGRAM.

CHANGE IN COMMODITIES VIEWED AS CAUSE OF CHANGE.

STATIC COMPARISON.



[illegible] Martin's Lane W.C.

therefore, in a dynamic comparison, is clearly due to a change in money.

The second diagram, on the other hand, starts from 1873 only, assumes a state of rest as at that date, and thence as commodities increase, while money does not, the fall in prices after that date is ascribed to the increase of commodities. It is the increase of commodities which causes a change from the assumed state of rest. But this second diagram is only a copy of the second half of the first, and deals with the same facts, only presenting them in a different way, and without comparison with the previous period, which is the essential point of the comparison in the first diagram.

The two comparisons, it is plain, are fundamentally different, and to argue as if they were the same must cause endless confusion.

My own opinion is that a statical comparison, besides being much more difficult than those who attempt it imagine, is not of much use when you do make it. The economic world is in incessant movement, and the comparison required for any purpose is almost always dynamic. You have to compare movement with movement if you want to find out what is changing, not state with state. In any case also the movement is much more easily compared. You may not be able to tell all the causes of a given economic condition so as to compare it with another economic condition and its causes; but if you can take two economic conditions succeeding each other, and point out a difference in the movement of one of two factors which must have contributed to the conditions, you have something definite and palpable to rely on.

Those who dwell on the abundance of commodities rely on the great authority of Tooke, and much of their writing is in fact a reminiscence of Tooke. I may be allowed a word therefore regarding Tooke's place in the literature of these discussions. To my mind he is completely superseded by Jevons. With all his industry and knowledge of business—and there is no more acute or fruitful author to study—Tooke never seems to have got into his mind the notion that the causes of changes in prices which he dealt with were not all on the same plane, and that most of what he said about good crops and the rest of it causing a fall in prices could be admitted without bringing into question the notion that looking at the whole history from another point of view the average changes from generation to generation could be described as changes in the value of money. He had no good idea besides of the logical or scientific value of an index number, such as his successor, Mr. Newmarch, found himself compelled to adopt in his continuation of the "History of Prices." Mr. Jevons has changed all that. By demonstrating how an index number can be used on an extensive scale, he has in fact demonstrated that in point of fact changes in average prices from generation to generation can be traced, *i.e.*, changes in the average purchasing power of money; and most of Tooke therefore, as far as questions like the present are concerned, goes by the board. In theory, however, Tooke never denied that there might be changes in the supply and demand for money adequate to cause great changes in prices Where he failed was in recognising the special character of the problem, and the inapplicability of most of the points he raised—as to good harvests and the like accounting for changes in particular commodities—in a discussion in which from the necessity of the case the average of commodities is itself the measure, and the question is not of real cheapness or dearness, but of money prices only. After Jevons, Tooke is really out of date, and nothing is more curious than to see how in the recent discussions disputant after disputant seems unable to follow Jevons, and prefers to go back to an order of ideas which is entirely superseded.

As showing farther the difficulty of the method of a statical comparison in this very matter, I may refer to the excellent mathematical work of Dr. Kral, with a preface by Dr. von Neumann-Spallart, in which an attempt is made to prove that the change from a high to a low level of prices is due to a change in commodities and not in money. It is evident from this book that if a solution could be found for this question, starting from a statical equilibrium, the most difficult mathematics would be necessary, whereas when a dynamic comparison is attempted, the result stands out with striking distinctness, and there is no difficulty.

I have only to add that for the purpose of forecasting the future it is absolutely necessary we should look at the matter dynamically. We cannot trace out all the causes which produce a given ratio between prices and commodities. We can see, however, that the movement in one or two important factors of that ratio is in a certain direction, by which an equilibrium of a certain kind is established. It is easy to predict that a continuance of the movement in the leading factors must lead to one kind of result, and an alteration in that movement to a different result.

The Redistribution of Wealth.

The consequences of an appreciation of money would demand a chapter of themselves, but though unable to treat the subject fully in the present paper, I am unwilling to pass over it altogether, as it must be referred to when we come to draw conclusions as *to* the future prospect.

These consequences are usually dealt with in two divisions:

1. The effect of appreciation in checking industry and so retarding the increase of wealth; and 2. The social and other effects of appreciation in redistributing wealth. The former of these branches need not, however, detain us. I do not consider it really important. Industry goes on with any sort of currency provided it does not change in short periods. It is hard to say whether abundant money causing inflation is better or worse in the end in its effect on production than a contraction of money which causes appreciation. What I have to say on these points moreover is said elsewhere. I shall only deal then with the effects of appreciation, and of course in this connection appreciation of the special character above described, in redistributing wealth.

It is obvious beyond all question that these effects may be important. Measured by a certain standard, the average of commodities, the weight of all permanent burdens is increased as compared with what would have been the case if there had been no appreciation. People in paying annuities or old debts have to give sovereigns which each represent a greater quantity of commodities, a greater quantity of the results of human energy, than it would have represented if there had been no appreciation. It may be quite true that on the average the individual in paying a debt, as his average income is not less, only uses the same proportion of that income or the capital represented by it to discharge the debt, and in this sense there is superficially no increase of the burden on the average in the case supposed; but it is hardly to be assumed, I think, that the increase of production is an increase without additional effort—it is the effort rather of a human unit who is always becoming on the average a stronger producer—and in admitting consequently that the same proportion of a larger production is required to pay larger debts, it remains true that there is an increase of burden, although it happens to be borne by stronger producers. It is at any rate quite clear that the benefit of an increase of production is distributed differently when money appreciates measured by commodities than when it does not appreciate. The debtors pay more than they would otherwise pay, and the creditors receive more.

The matter is thus not unimportant to the two large classes of people who make up the community. Appreciation is a most serious matter to those who have debts to pay. It prevents them gaining by the development of industry as they would otherwise gain. There may be compensations in different directions, as by the lowering of the rate of interest which seems to take place as the result of appreciation, but on the whole the balance is against the debtor, as compared with what it would be if there were no appreciation.

On a large scale this applies to transactions between nations. A creditor nation is able to draw more from its tributaries, who have to pay it in the appreciating money than it would otherwise be able to draw. To pay the same debt they must send to their creditors 30, 50, perhaps 100 per cent. more produce than they would otherwise have to send. There is no doubt that in this sense the weight of the gold debt of a debtor-country like India or the United States has enormously increased of late years. The resources in both cases may have grown even more largely than the burden, but there is nevertheless an increase of the burden itself.

All this is treating the question with regard to the average effect. It is still more important to remember, however, that the average may be made up of a great variety of cases, and in fact there is no doubt the redistribution described spells ruin to individuals and classes. Although average production is increased, there are large masses of property where there is no increase, or little increase, where the fall of prices therefore means a diminution of the gross money return, and where, consequently, the property being mortgaged, the margin of the mortgagor is swept away. This has now become a familiar matter to most people in connection with the depression in land owning, but the landlord only exemplifies an extreme case of a general mischief. He owns very often only the margin of a margin. The rent itself is the margin of profit remaining after the expenses of cultivation and the farmer's profit have been deducted from the gross produce, these expenses not being reducible, at any rate at once, with the fall in prices. Of this margin again the nominal owner only gets a remainder, and he would often be a loser, even if the rent represented the same proportion of the gross produce as before, because being less in money the whole of it is swept away by the charges and debenture interest so that there is no remainder. In this way landowners who seemed to have so safe a position have been ruined by the score. But this case is the case *mutatis mutandis* of every ordinary shareholder in a company who has debenture holders and holders of preference shares in front of him. Margins are everywhere endangered. On the other hand the owners of the preferences so long as they are safe are paid much more than they would have been paid if there had been no appreciation. They belong to the creditor class, and gain where the others lose.

All this, let me repeat, is involved in the appreciation of money measured by commodities, even though incomes as a rule do not diminish. The mischiefs are no doubt less than if there was a still greater fall of prices, accompanied by a serious diminution of incomes on the average. But they are mischiefs as far as they go. No doubt one reason they have been less felt than would otherwise have been the case is that many people are both debtors and creditors. They not only own land perhaps, but they own Government and the like stocks, where they are preferred creditors, and where they gain consequently by the appreciation of money. But there are sufficient cases of marginal owners whose margins have been swept away to make the social effects of the redistribution of wealth involved in the appreciation of money measured by commodities very widely felt.

At the same time, it should be recognised that in some cases the appreciation, though it means apparently a redistribution of wealth, does not really involve that mischief; it only anticipates what would otherwise happen. For instance, in giving more to a wage receiver or salaried servant, whose nominal income is unchanged, it may still only place him in the position in which a gradual rise in the scale of living would have placed him. If real wealth had been increasing without a corresponding fall of prices, or rise in the purchasing power of money, then wages and salaries must infallibly have risen. In these cases, although redistribution of wealth seems involved in the appreciation, there is no real redistribution involved; there is a general increase, in which all incomes participate on the average.

The appreciation in any case is not one to be regarded with a panic feeling except in special cases. Especially as regards national debts, which are not themselves increasing in amount, the increase of burden need not be very formidable, for two reasons: 1. The reason already mentioned, that the income per head in the case supposed does not diminish, so that the charge per head cannot be more than it was before; and 2. The fact that population in an advancing community is always increasing, so that if the debt does increase, the burden on each individual taxpayer must diminish from period to period by the increase of their numbers. The taxpayer does not gain as he would gain if there were no appreciation of money; but the case must not be spoken of as that of a debt growing and swamping the debtor. There is a third reason, viz., the reduction of interest which seems to be a consequence of the appreciation of money; but as this involves disputable matter, I do not insist upon it, although in the case of our own national debt the reduction of interest by conversion, as we all know, has been most serious. It is obvious practically that there are many national debts where the appreciation of money, for the reasons stated, and also because the debt is so small, does not lead to such an increase of burden as to be serious. It does not follow, of course, that all communities and all national debts are in the same case. Where debts increase fast, and where, in addition, as in the case of France, there is no rapid increase of population, the problems involved in the appreciation of money may at any time become serious. I should look for troublous times, for instance, both for some of our Australasian colonies and for a country like the Argentine Republic, even if the appreciation does not grow more serious than it has been. That the pile of debts has to be paid, principal and interest, in appreciating money, even if individual money incomes do not diminish, is a most serious consideration. The increase of the wealth of such borrowers ought to be enormous to enable them to bear safely the debts they are incurring.

The Future Course of Prices.

What is to be the movement of prices in the future? Of course no one would attempt prophecy in such a matter. We can only assume the continuance of certain conditions which seem more or less probable, and infer from past experience what the result will be. In 1872 this method of proceeding enabled me to anticipate as highly probable the fall of prices which has since in fact occurred. What are the data now for an anticipation regarding the future?

On this head then I am bound to say all the evidence seems to me to point to a continuance of the appreciation. So far as can be judged, there is no end to the progress of invention or improvement in industrial qualities among gold using communities. The increase of the numbers of such communities, especially English speaking communities, also goes on at a very rapid rate. The conditions therefore are generally so far the same as they were in 1872. There are no special demands for gold ahead such as were then in view, first of all for Germany, and more recently for the United States; but, *per contra*, the area of ordinary use has been enormously enlarged. France and England before 1872 were almost the only gold using countries, the United States at that moment, though gold was its principal metallic money in use, being on a paper basis; but since 1872 Germany, the United States, and Italy, among the leading countries of the world, have all become gold using. The increase of population among some of these new additions to the gold using area has also been remarkable, while the increase in England goes on at as great a rate as before, and the increase among the minor gold using countries, such as the Australian colonies, the Cape, and Brazil has also been remarkable. It has to be considered again that the transition from a silver to a gold standard among wealthy nations is a secular phenomenon, and that we may fairly expect the gold using area to increase as one nation after another becomes richer. First England about two centuries ago went over to gold; more recently, rather more than fifty years ago, the United States went over to gold with the help of a bimetallic law, but really with a deliberate intention to get gold; still more recently, France took to gold, refusing to part with it after having once got it, and suspending the coinage of silver when silver threatened to become the principal money in use, and therefore the standard, just as England, for similar reasons, suspended the coinage of silver in 1798; still more recently Germany, and then Italy, not to speak of minor countries, have become gold using. It is impossible to suppose that this favour to gold is accidental, or that the movement to adopt it will not extend to other countries as they grow richer. We who are gold using may think it highly desirable that other nations should favour silver more than they do, but the tendency to go over to gold must be recognised as a fact. At this very moment two of the countries to whom a silver money might be thought most useful when they resume specie payments, viz., Russia and Austria, do in fact keep large bullion reserves in gold, this being especially noticeable in the case of Russia; while the intention to have a basis in gold is further marked in the case of Austria by the fact that silver is at a discount compared with the paper, and gold only at a premium. I should anticipate, therefore, as most likely an extension, and not a contraction, of the gold using area in the coming years. There is also a natural reason of great weight for the preference. As peoples become richer the mere weight of silver makes it inconvenient for all concerned to handle it to the necessary amounts if it is used at all in the daily transactions of life. Gold becomes a *quasi* necessity and not merely a luxury, and this necessity increases rather than diminishes not only among communities which are not gold using, but even among those which are already on a gold basis. With regard again to the use of gold in the arts, we cannot but expect the demand of the richer nations as they grow richer to increase. It is now very considerable, amounting at a fair computation to two-thirds of the annual production, and is most likely to increase.

All these facts point to a continued pressure upon gold, against which the only compensation would be a more extended use of economising expedients. Such economising expedients will in fact, as I believe, mitigate and modify the demand for gold, but the question is to what extent? and just as I believed in 1872 that they would not do so to the extent of preventing a fall of prices, should the supply of gold not increase, so I do not believe now that they will have a mitigating effect to any serious extent. The question then becomes, what is to be the supply of gold? A great deal is said about the Transvaal and other sources of supply, and if there should be an enormous development of gold mining the tendency towards a rise in the purchasing power of gold would no doubt be checked or reversed. But it would take a very large development indeed to produce any result of the kind, perhaps an addition of 10 or 20 millions to the annual supply, while the demand itself will of course increase with a diminished cost of producing gold as compared with other things. The better probability seems therefore to be that the increase of the purchasing power of gold will continue from the present time. If it does not increase, there must be a very large increase of the supply.

Will silver participate in the fall along with other commodities? Here the better probability seems also to be that the tendencies rather are towards an increase of the divergence between gold and silver which has been going on for centuries, in consequence, as I believe, of the growing wealth of nations making them turn to gold one after another as they find or make opportunity. The silver using nations are nations with much smaller individual incomes than gold using nations; they are not so progressive; while if they do progress they are apt to resort to gold more and more, partly as a supplement to, and partly as a substitute for, silver as they come to have a variety of dealings and transactions in which gold is more useful than silver. At the same time nothing is more remarkable than the continued increase of the supply of silver, which is produced geologically as yet under different conditions from gold, and is more susceptible of almost unlimited development. The difference between gold and silver geologically was well expressed by M. Leon Faucher forty years ago, when people were excited by the gold discoveries, and his remarks have since been confirmed by the subsequent great development of silver mining. M. Faucher says:—

"It is not without some show of reason that mythology, "transporting the analogy of the physical into the moral world, "made the age of silver succeed that of gold. Historically, in "fact, the discovery of and the working of gold preceded that of "silver. Gold is almost always found either pure or mixed with "silver. In searching the beds of rivers and streams it has been "obtained by the mere process of washing. This work is within "the reach of the rudest state of society. It appears like a "treasure spread over the surface of the earth, under the very feet "of the first occupier of the soil. Silver, on the contrary, is embedded in rocks of primitive formation, and is seldom found near "the surface of the earth; its extraction requires a combination of "science, machinery, and capital. It is the work of a state of "civilisation already far advanced and firmly established . . . . . "Not only did the value of money and of the precious metals "increase in the long dark night of the middle ages, but the "relative value between silver and gold which had been established "by the progress of industry again changed. Gold preserved its "value the longest; its supply was fed by the washings of the "golden sands, a fit occupation for the knowledge and tastes "of an ignorant people. The working of the silver mines, on the "other hand, being a work befitting a civilised and scientific people, "was naturally interrupted, and languished during a period of "spoliation and endless warfare. Hence, as we may suppose, even "the scarcity, both relative and absolute, of silver; the comparison "with gold remained at 11 and 12 to 1 from the ninth to the middle "of the sixteenth century. It required the excessive and sudden "abundance springing from the working of the mines of Potosi "and Peru, and of Zacatecas in Mexico, to reduce the proportion "to 14 and 15, the average rate at which it remained in Europe "until the end of last century.[11]

There is a strong drift of things therefore towards appreciation of gold, and relative depreciation of silver, though not as yet an actual depreciation of silver measured by commodities. If this drift goes on, the divergence between the two metals will increase and not diminish. This impression will be confirmed, I think, when the ratio between the two metals is looked at historically. I extract the following short table from Soetbeer, adding the figures subsequent to 1680 as of common knowledge :—

Ratio of Silver to Gold from 1,500 *to the present time.*

Years.	Ratio Silver to Gold.	Years.	Ratio Silver to Gold.
1501–20	10·75 : 1	1641–60	14·50 : 1
'21–40	11·25 : 1	'61–80	15·00 : 1
'41–60	11·30 : 1		
'61–80	11·50 : 1	1800	15½ : 1
'81–1600	11·80 : 1	1800–50	15¾ : 1
1601–20	12·25 : 1	'50–70	15·40 : 1
'21–40	14·00 : 1	Present time	22·00 : 1

The steady dwindling of the ratio of silver to gold over the whole period is manifest, and perhaps it may be lawful to mention, without incurring the charge of bringing in the bimetallic controversy, that the great nations of the world, with the single exception of England after 1680, before which a considerable part of the fall took place, were bimetallic almost the whole time. The movement has thus been steadily towards a decline of silver in reference to gold. Of course the change in the last few years has been most unusually sudden and severe, but there was, it will be observed, a very serious change, indeed, in the early part of the seventeenth century, and it may be suggested that the whole economic movement in modern times is quicker than it was formerly, while the run upon gold has been fostered by the unusual supply which came on the market from 1850 onwards, and the increase of supply in the case of silver, from the sheer weight of it, produces no such effect, if it does not produce the opposite effect.

---

[11] Leon Faucher, "Remarks on the Production of the Precious Metals." Translated by Thomson Hankey, jun. London, 1852.

I regard all this movement and have described it as a natural movement. This would hardly be the place to discuss the bimetallic theory if we were inclined to do so, but certainly it may be allowed, even by bimetallists, I think, that the tendencies to divergence between gold and silver are strong enough to require a very powerful controlling influence to keep a constant ratio between them, if they are to be controlled at all, which I do not believe to be possible. In fact, but for the accidental gold discoveries of 1848-50, and the previous discoveries in Russia, the increasing divergence between gold and silver which was manifested before that time would have long previously produced a fall of silver in relation to gold like that we now witness. Such a fall was in fact anticipated by economic experts before 1850. The events of 1848-50 suspended the economic development. To all appearance it is again in full course. The probabilities appear to point to a further heavy fall of silver in the next ten or twenty years, the reason at bottom being the run upon gold and the short supply of it, though the steady increase of the production of silver, and the comparatively limited natural area of its use, also count.

Is there anything to be done by Governments to mitigate the appreciation of gold or provide against its effects, is a question which will naturally arise. The anticipation I ventured to indulge in in 1879 to the effect that we should infallibly have such topics as the issue of 1*l.* notes brought up for discussion has certainly been more than fulfilled. To find a Royal Commission recommending the issue, not merely of 1*l.* notes but of 10*s.* notes, and these based on silver, is certainly a sign of increased readiness to discuss currency innovations. But the only suggestion I would make is of a statistical kind. All these difficulties seem to me to suggest the expediency of further scientific study by those interested of the theory and practice of index numbers, which supply a means for providing for deferred payments by substituting a different currency for money, as is done by the corn averages for tithe and by corn rents generally. If we cannot invent a money that will itself be stable over generations, may it not be possible to devise a substitute by which the deferred payments will themselves change with the changing value measured by some other standard, and in that way the redistribution of wealth will in some degree be lessened?

This last suggestion can hardly be expected to be a very popular one at present, while as yet index numbers are hardly known to the public. It is remote enough from any practical issues. But in any case, it may be hoped, studies like what we have been engaged in to-night will not be in vain apart from practical issues. Knowledge is always useful, and a clear insight into what is going on and what is fairly to be anticipated may both prevent panic and enable business people to make sensible arrangements in their provisions for the future which otherwise they would not think of. In documents charging estates, for instance, lawyers might have been able to save their clients much embarrassment by charging a *percentage* of net rental only, or a sum to be varied by another measure, as the tithe is varied, instead of a fixed and unchangeable sum in money. Generally in a time of appreciating money business men must consider carefully the effect of engagements to pay money at distant dates. Many mischiefs might have been avoided if all concerned had realised ten or fifteen years ago what was likely to happen in money, and good will now be done if possibilities are kept steadily in view.

APPENDIX A.

Extracts from Replies to Circulars issued by the Royal Commission on Trade Depression as to the Rate of Wages.

I.—*Commercial Associations. Replies to Question* 10 *of Circular.*

Q. 10.—Is the rate of wages in relation to service rendered, and to the quality and quantity of the work produced: (*a*) for skilled and (*b*) for unskilled labour in your trade or industry, above or below the average of the last twenty years?

AGRICULTURAL ENGINEERS' ASSOCIATION.

London.—

ALKALI MANUFACTURERS' ASSOCIATION.

Liverpool.—

BRITISH SUGAR REFINERS' ASSOCIATION.

London.—Above.

CLEVELAND IRONMASTERS' ASSOCIATION.

Middlesbrough.—The rates of wages in this industry have gone up considerably within the past twenty years. The quality of the labour, skilled and unskilled, has not in any way deteriorated.

LEATHER TRADES' ASSOCIATION.

Leeds.—Fully equal to the average.

LINEN MERCHANTS' ASSOCIATION.

Belfast.—Slightly below the average of the last twenty years, which include some inflated years immediately succeeding the termination of the American war.

NEEDLE MANUFACTURERS' ASSOCIATION.

Redditch.—(*a.*) Yes, above.
(*b.*) Yes, above.

NORTH OF ENGLAND IRON MANUFACTURERS' ASSOCIATION.

Middlesbrough.—Below in both cases.

PAPERMAKERS' ASSOCIATION.

Workmen, both skilled and unskilled, are receiving higher weekly wages than they were twenty years ago, though the cost in wages, per ton of paper produced, has been diminished.

SHROPSHIRE IRONMASTERS' ASSOCIATION AND SHROPSHIRE FINISHED IRONMAKERS' ASSOCIATION.

The rate of wages for both skilled and unskilled labour is below the average of the last twenty years, but this is chiefly owing to these rates during the years 1872 to 1875 having been considerably above the average, some of them having been higher than in any previous time.

STARCH TRADE ASSOCIATION.

London.—

SUNDERLAND SHIPOWNERS' SOCIETY.

Sunderland.—The wages for skilled labour in connection with the steam power now used in navigation has added greatly to the cost of navigation. The wages of the superior officers has as a consequence greatly increased, and even the wages of ordinary seamen are above the average of the last twenty years.

TINPLATE MANUFACTURERS' ASSOCIATION.

Our wages are controlled not by supply and demand but by a trades' union. They are almost entirely paid by piece-work, so much per box, and the rates are the same as were paid thirty years ago. During that period improvements in plant have doubled the output of a mill, and we have men earning 50*s.* to 60*s.* a week for eight hours' work, and youths of 19 or 20 getting 35*s.* to 40*s.* a week. These extravagant wages are kept up by the union, and go on just the same whether the manufacturer be making a profit or losing money by every box he makes.

WIRE TRADE ASSOCIATION.

(*a.*) While the rate of wages in relation to services rendered, and quantity and quality of the work produced, is below the average of the last twenty years, the weekly earnings of the individual skilled labourer has not decreased. The quality of skilled labour has improved, and owing to the continuous developments in machinery the quantity has increased.

(*b.*) The rate of wages for unskilled labour over the same period has increased 10 per cent.

FLAX SUPPLY ASSOCIATION.

Belfast.—The rate of wages for spinning and weaving is a little below the average of the last twenty years; unskilled labour is above the average.

GENERAL SHIPOWNERS' SOCIETY.

London.—We limit this reply to the question of wages and outfit expenses.

Wages have varied about 12 per cent., up and down, during the whole period, as compared with the present rate.

Outfit expenses are now less, prices generally being lower, but the reduction is very far from being proportionate to the decline in freights.

INSTITUTE OF BUILDERS.

London.—Above in both cases. The mechanics have become more specialists, though the average is not so good.

LEATHER TRADE ASSOCIATION.

London.—(*a.*) Skilled labour is about the same as the average twenty years since.

(*b.*) Unskilled labour rather dearer.

LEATHER TRADE AND INDUSTRY, LONDON.

Foreign Competition.—The imports of finished leather of all descriptions have increased rapidly since 1880, and exports have not increased, thus showing how much we have to complain of in foreign tariffs. We could hold our own against all competition, and sell in all markets, were there ports as free to English leather as ours are to foreign. Secure us free ports, or allow us to supply ourselves. There are causes at work that affect, viz., higher wages than the continental workman gets, and shorter hours of labour, and excessive rates and taxes, through our sanitary laws being more severe. The results are, of course, beneficial to the community, but they none the less operate in favour of increasing the cost of production.

THE MINING ASSOCIATION OF GREAT BRITAIN.

South Lancashire and Cheshire Coal Association.

South Staffordshire and East Worcestershire Coal Masters' Association.—Above.

Monmouthshire and South Wales Collieries' Association.—

(*a.*) Above.
(*b.*) „

Derbyshire, Notts, Leicestershire, and Warwickshire Colliery Owners' Association.—The rise in wages was so very great in the years 1872, 1873, and 1874 as to raise the average of the last twenty years above the level of the present day, but eliminating those years, wages of all classes of labour, except mechanical and surface labour, are about the same as the average of the remaining seventeen years; but taking into account the shortened hours of labour and other expenses consequent on the legislation of the past fifteen years, the cost of labour per ton of coal raised is higher than that average.

DURHAM COAL TRADE ASSOCIATION.

The rate of wages of skilled men and those paid by the day with regard to the quantity of work produced is considerably above the average of 1871. The same remark applies to rate of wages paid to the hewers and underground piece workmen, although not quite to the same extent.

NORTHUMBERLAND COAL TRADE ASSOCIATION.

The general run of wages is now less than in 1865 to 1870, but in some cases, especially in skilled labour on the surface, the shortened hours make it more costly to the owner.

NATIONAL ASSOCIATION OF MASTER BUILDERS, GREAT BRITAIN.

The rate of wages at present, both for skilled and unskilled labour, is above the average of the last twenty years, especially in the case of the latter.

NOTTINGHAMSHIRE AND MIDLANDS MERCHANTS' AND TRADERS' ASSOCIATION.

The rate of wages, both of skilled and unskilled labour, is considerably above the average of the last twenty years; but the tendency quite recently has been towards a reduction of wages.

NORTHERN COUNTIES COACHMAKERS' ASSOCIATION.

The money wages are from 10 to 20 per cent. higher than they were twenty years ago, and owing to the reduction of working hours there is an additional cost of from 10 to 15 per cent.

OLDHAM MASTER COTTON SPINNERS' ASSOCIATION.

We should say it is considerably above the average of the last twenty years.

RYE DISTRICT COMMERCIAL ASSOCIATION.

(*a*.) Both skilled and unskilled.

(*b*.) Workmen do less for their money than they did formerly. The price of labour has a tendency to increase, and the amount of work done to decrease. The farm labourer has within the last two months been reduced from 2*s*. 6*d*. to 2*s*. 3*d*., or in some cases to 2*s*. per day.

SCOTTISH PAPER MAKERS' ASSOCIATION.

Workmen, both skilled and unskilled, are receiving higher wages than they were twenty years ago, though the cost in wages per ton of paper produced has been diminished.

(Replies by Alexander Annandale, Dunbar.)

(*a.*) Wages have increased during the past twenty years fully 30 per cent. on skilled labour.

(*b.*) On unskilled, the wages are regulated by that of the district for ordinary labourers.

SOUTH WALES ASSOCIATION OF THE MANUFACTURERS OF CHEMICAL PRODUCTS FROM WOOD.

Wages are rather less than during the inflated years 1871 to 1875, but have not been materially affected.

II.—*Workmen's Associations (Replies to Question* 14 *of Circular).*

[Q. 14. In your trade what changes have there been in the rate of wages during the last twenty years in your district.—

(*a.*) For piece work,
(*b.*) For time work.]?

AMALGAMATED SOCIETY OF ENGINEERS.

Belfast.—(*b.*) A slight improvement for time work.

Coventry.—(*a.*) The prices of contract work have been reduced 50 per cent.

(*b.*) The day rates have remained much the same.

Dukinfield.—(*b.*) A slight advance, much more than compensated by the far larger amount of work done in a given time.

Dundee.—The changes are for time work :—

1865	22*s.* per week		1883	29*s.* per week
'72	24*s.* „		'85	25*s.* „
'80	26*s.* „			

Glasgow.—There have been many fluctuations. In good trade wages go up, whilst in bad trade they certainly go down.

(*a.*) The price of piece work here has for twenty years steadily receded, sometimes quicker, sometimes slower, but always declining; still as the price goes down men scheme and try to make up for each reduction, until for locomotive work it is practically task work.

(*b.*) Just now wages, that is time wages, are nearly down to the level of 1864, perhaps 5 per cent. above. But there is this difference, men work 54 hours per week for their wage, whilst in 1864 the hours were 60 per week. This is a clear gain.

Glasgow.—(*a.*) For piece work a general fall of from 50 to 75 per cent.

(*b.*) Wages in busy times, like 1872-73, having risen about

15 per cent., and in dull times again reduced to about the same rate as twenty years ago.

Glossop.—

Halifax.—

Hartlepool.—(*a.*) There has been an advance of 3*s.*

Liverpool.—(*a.*) Not recognised.

(*b.*) During the last twenty years we have had an advance of 7½ per cent., and the same amount of reduction at present, working at the reduced rate.

London.—Increased about 4*s.* per week for time work. Piece work, reduction, and work scamped.

Monifieth.—(*a.*) There is no piece work.

(*b.*) From 24*s.* in 1865 to 27*s.* in 1876, falling from that time till 1878 to 25*s.*, again rising to 28*s.* in 1883, then falling again to 25*s.* in 1885. These are the top wages for skilled labour.

Neath.—(*a.*) Nothing known about it.

(*b.*) There has been on the whole a movement upwards, but within the last seven or eight years a decline or a difficulty in sustaining the advance.

I may say that when I left this my native place in 1870, fitters' wages in my then shop were about 22*s.* to 23*s.*; when I returned in 1877, 26*s.* to 28*s.* in same shop (since closed). They went up after the introduction of the nine hours' system, and during what is known as the coal famine; since that time it has been as much as we can do to keep up, and if anything there has been a falling off.

Nottingham.—(*b.*) An advance of 6*s.* per week has taken place during the last twenty years.

Oldham.—(*a.*) As regards piece work the price per article is considerably less now; but, owing to improved machinery, the wages earned are about 5 per cent. better than they were twenty years ago. Time work wages are similarly better.

Oxford.—

Paisley.—(*b.*) For time work the wages have increased about 2*s.* 6*d.* per week during the last twenty years.

Preston.—Practically no change.

Sheerness.—

Sheffield.—

Shipley.—(*a.*) No piece work.

(*b.*) The wages are about the same as they were twenty years ago. They would average 2*s.* or 3*s.* higher from about 1869 to 1873, but they have since gone down to their old level.

Sowerby Bridge.—(*a.*) During twenty years wages have advanced 20 per cent.; for the past ten years none whatever.

Sunderland.—Since the year 1864 wages in our trade have had several changes, having been in 1864 about 27*s.* per week, and they increased to 34*s.* in 1874, and since then, up to the present, they have fluctuated between 31*s.* and 37*s.* per week.

Swindon.—(*a.*) Reduction has taken place in the piece work prices, but unable to give per cent.

(*b.*) Slight increase.

Ulverstone.—Wages increased from 26*s.* for fifty-seven and a half hours to 31*s.* for fifty-four hours.

Wednesbury.—Increase 2*s.* per week.

Widnes.—

Workington.—About 30 per cent. increase in both systems.

STEAM ENGINE MAKERS' SOCIETY.

Blackburn.—(*b.*) 2*l.* per week.

Chatham.—

Manchester.—In the North of England wages have advanced about 10 per cent. In the Midlands and Southern counties about 2*s.* per week on day work terms.

(*a.*) Piece work. No record is kept, but considerable reductions have taken place, varying from 10 to 100 per cent.

Plumstead.—(*a.*) About the same this last thirty years.
(*b.*) About the same this last thirty years.

BOILER MAKERS AND IRON SHIPBUILDERS.

Ayr.—In 1882 and 1883 we attained our highest rate of wages, but at present our rate of wages is even lower nor what it was any time previous both on time and piece work.

Hartlepool.—Piece work wage has advanced and fallen with the times, and are rather higher.

Hull.—(*a.*) We have received 10 per cent. above the present rate in good times.

(*b.*) We have received 2*s.* per week more than the present rate in good times.

Lancaster.—

Liverpool.—(*a.*) Piece work about 15 per cent. less.
(*b.*) 2*s.* per week less.

Maryport.—None.
(*a.*) None.

Peterborough.—Have no knowledge.

Stanningley.—(*b.*) From 2*s.* to 4*s.* per week advance.

Stockton-on-Tees.—Shipbuilders' wages are 10 per cent. less now than at any time we know. The day wages do not vary very much, perhaps we may be getting 2*s.* more now than twenty years ago.

Waterford.—(*b.*) 10 per cent. reduction.

Whitehaven.—

1877	Reduction in	wages	1884	Reduction in wages	
'79	”	”	'85	”	
'81	Advance	”	'86	”	
'83	”	”			

FRIENDLY SOCIETY OF IRONFOUNDERS.

Accrington.—It has been 2*s.* above the present rate, and at the present rate several times during the last twenty years for time work.

Barnsley.—The wages for time work per week this last ten years is from 2*s.* or 3*s.* per week higher than they were the previous ten years.

Birkenhead.—Several changes, with the result wages are the same now as twenty years ago.

Bristol.—

Bury.—

Chester.—(*b.*) 0·44 pence per hour.

Derby.—(*a.*) Can't say, as the work is so changeable in make and shape.

(*b.*) About 2*s.* per week higher now.

Dudley.—

Dumfries.—From 1*l.* 4*s.* to 1*l.* 7*s.*

Gateshead.—I should say wages have gone up 6*s.* per week during the last twenty years.

Halifax.—There has been an increase of wages in this town of 6*s.* per week in this last twenty years.

Huddersfield.—None.

Ipswich.—(*a.*) 25 per cent. reduction.
(*b.*) 2*s.* per week increase.

Lincoln.—(*b.*) Twenty years ago 5*d.* per hour.

Liverpool.—The rate of wages paid in this district some twenty years ago was from 30*s.* to 32*s.* per week. The present rate is from 34*s.* to 36*s.* per week.

Llanelly.—

Leamington.—(*b.*) A rise of 2*s.* per week.

London.—An advance of 2*s.* per week for time work only.

Maidstone.—None.

Reading.—(*a.*) Reduction in prices.
(*b.*) Extra work demanded.

Rochdale.—(*a.*) Reduced 7½ per cent.
(*b.*) Reduced and raised according to trade.

Smethwick.—(*a.*) I do not know.

(*b.*) Twenty years ago the rate of wages in this district was 5*s.* to 5*s.* 4*d.* per day.

Southampton.—During the last twenty years the wages has varied according to the state of trade in one or two firms, with others it has been stationary. The rate has been from 2*s.* to 4*s.* per week more.

(*a.*) At the present time the same as twenty years ago—I may say twenty-five years ago.

(*b.*) For time work.

South Shields.—(*a.*) About the year 1865 time wages ran about 26*s.* to 28*s.* per week. Now they are from 24*s.* to 36*s.*

(*b.*) For piece work the prices are not much different.

Stalybridge.—2*s.* per week less for a period of two years and six months (before and after) than the usual rate of wages, viz., 36*s.* per week.

Stockport.—

Stourbridge.—2*s.* per week.

Swansea.—(*a.*) We have no piece work.

(*b.*) In 1865 the wages in the town averaged 1*l.* 1*s.*, now 1*l.* 10*s.*; but at present, in the country places, it is quite different; some men are working for as little as 17*s.* 6*d.* per week.

Todmorden.—Ironmoulders at present are receiving 34*s.* per week of fifty-four hours. From 1875 to 1877 we were receiving 36*s.* per week; in 1880 we were receiving 32*s.* per week; in 1885 moulders in this branch were receiving 34*s.* per week.

Warrington.—It has fluctuated. Twenty years ago the same wages as now, but during this time we have had reductions of wages according to the state of trade.

Wolverton.—(*a.*) The prices for piece work are nearly 20 per cent. lower than they were twenty years ago.

(*b.*) The rates of wages are not increased, but very trifling to what they were in 1865, whereas nearly all the necessaries of life have largely decreased in price.

Workington.—From 5½*d.* to 6½*d.*

ASSOCIATED IRONMOULDERS OF SCOTLAND.

Dundee.—There has not been much change except during 1882 and 1883, when the average reached 34*s.* or 35*s.* per week.

Glasgow.—The wages to-day are (no) improvement on twenty years ago. This applies to (*a.*) and (*b.*), while the amount of work is not exaggerated I believe in answer at (No. 10 query.[12])

ASSOCIATED SHIPWRIGHTS.

Barrow-in-Furness.—27*s.* per week from 1865 to 1869, and rose to 36*s.* in 1874; from 1875 to 1878, 31*s.*; and up to 1883, 33*s.*; at present 31*s.* 6*d.* full time, but 24*s.* 8*d.* owing to the three-quarter time.

---

[12] Everything now wanted is in such (post haste hurry) that men in our trade are compelled to do (per day) now what in many cases took from (two till three days) some years ago to accomplish.

Glasgow.—For time work we had twenty years ago in—

	£	*s.*	*d.*		
1865	1	16	–	for a week of	60 hours
'67	1	5	8	,,	57 ,,
'71	1	7	1	,,	57 ,,
'72	1	8	6	,,	54 ,,
'73	1	10	4	,,	51 ,,
'74	1	14	–	,,	51 ,,
'75	1	11	10	,,	51 ,,
'76	1	9	9	,,	51 ,,
'78	1	7	7½	,,	51 ,,
'79	1	9	3	,,	54 ,,
'81	1	11	6	,,	54 ,,
'82	1	13	9	,,	54 ,,
'83	1	16	–	,,	54 ,,
'84	1	13	9	,,	54 ,,
84	1	11	6	,,	54 ,,
'85	1	10	4½	,,	54 ,,

Being 30*s.* 4½*d.* at present for 54 hours per week, the lowest amount during these last fourteen years, and 5*s.* 7½*d.* less per week than we received twenty years ago.

Kinghorn.—In the course of twenty years 1*d.* advance, as near as we can, but the wages has risen and fallen several times in that time.

Preston.—For time work twenty years ago, wages was 28*s.*, now they are 30*s.* per week.

AMALGAMATED SHIPWRIGHTS' SOCIETY OF GREAT BRITAIN.

Bristol.—(*a.*) From 5*s.* per day to 5*s.* 6*d.* per day.
(*b.*) From 5*s.* 6*d.* to 6*s.* per day.

ASSOCIATED BLACKSMITHS.

Arbroath.—Rise; 10 per cent.

Ardrossan.—(*b.*) 15 per cent. of a reduction.

Edinburgh.—(*a.*) No piece work wrought.
(*b.*) 6*s.* of an increase per week.

Renfrew.—Piece work rates have fell 35 per cent. in the last twenty years. Time work much the same.

LOYAL FREE INDUSTRIOUS SOCIETY OF WHEELWRIGHTS AND BLACKSMITHS.

Burnley.—(*b.*) Improved.

Grantham.—(*a.*) Owing to machinery being introduced in the shops it is rather hard to say with safety. For piece work I should say 10 to 15, in some cases 20 per cent. For time work 5 to 8 per cent.

Leeds.—(*b.*) From 4*d.* to 6*d.* per hour advance.

Lincoln.—(*a.*) Reduction in price.

(*b.*) Increase.

Nottingham.—There has been an increase in the rate of wages of about 12 per cent. during the last twenty years.

UNITED KINGDOM SOCIETY OF COACHMAKERS.

Ashford.—7½ per cent. reduction.

Blackburn.—Many changes as regards wages, sometimes good, but of late have lowered very much.

(*a.*) And as regards piece work that is left to the man and his master what they agree to, likewise time work.

Carlisle.—(*b.*) 2*s.* reduce per week.

Cheltenham.—(*b.*) 2*s.* per week per man.

Darlington.—(*a.*) Cannot answer.

(*b.*) From 2*s.* to 3*s.* advance.

Devizes.—The wages I should think have advanced probably in some cases about 10 per cent. to what they were twenty years ago.

Downpatrick.—Wages have risen during the last twenty years from 25 to 30 per cent.

(*a.*) Piece work is not adopted in this district.

(*b.*) As above.

Dublin.—(*a.*) Piece prices are very much reduced, and time work also.

Dundee.—(*a.*) None.

(*b.*) On an average about 9*s.* per week.

Halifax.—Wages are no more now than they were twenty years ago.

Kelso.—(*b.*) An advance of 2*s.* to 3*s.* per week.

Leeds.—Wages has decreased.

Lichfield.—2*s.* per week increase.

Newcastle-on-Tyne.—(*a.*) Piece work prices are about the same as they were twenty years ago.

(*b.*) Time wages are about 5 or 10 per cent. higher.

Perth.—(*b.*) About average.

Taunton.—None.

Uttoxeter.—5 per cent. increase.

Wakefield.—None. (*a.*) None. (*b.*) About the same.

Warrington.—From 1868 up to 1878 the tendency was to rise in wages.

From 1878 to 1885 the tendency has been to lower wages.

Wolverton.—(*a.*) A reduction on piece work of 5 per cent.

(*b.*) An increase of about the same.

SMITHS' FRIENDLY AND BENEFIT SOCIETY.

Oldham.—Generally speaking, no change whatever on (*b.*) time work, but a slight deduction on (*a.*) piece work.

UNITED PATTERN MAKERS' ASSOCIATION.

Glasgow.—I cannot go back so far as twenty years, as our reports take no note of wages, but during the last three years wages have been reduced from 8*s.* to 10*s.* per week in this city and district.

CHAIN, CART, GEAR, AND CASE FRAME MAKERS' ASSOCIATION.

Walsall.—As far as we can calculate the average payment for a week's work done would be about 18*s.*, but from 1870 to 1875 that wage would be 24*s.* for the same work done.

TIN PLATE WORKERS.

Wolverhampton.—Only one rise of 10 per cent. in 1874.

OPERATIVE BRICKLAYERS' SOCIETY.

Bournemouth.—From 4*s.* per day to 6½*d.* per hour.
(*a.*) About 25 per cent. advance.

Camberwell.—(*a.*) For some classes of work more is paid, and for other less.

(*b.*) 2*d.* per hour advance.

Cheltenham.—Twenty years back wages was 4*s.* per day for time work.

(*a.*) Seventeen years back wages was 4*s.* 6*d.* per day for time-work.

(*b.*) In the year 1871 wages began to be paid by the hour, and has continued up till the present for time work.

Dudley.—(*b.*) About 1*d.* per hour advance.

Halesowen.—(*b.*) 10*s.* per week.

Hampstead.—As regards day work our wages have been 9*d.* per hour since August, 1873; previous to that date I am unable to answer correctly.

Highbury and Upper Holloway.—(*b.*) From 5*s.* 6*d.* per day of ten hours to 9*d.* per hour.

Ironbridge.—(*b.*) About 4*d.* per day rise.

Jarrow.—(*a.*) For piece work this last ten years has gradually decreased.

(*b.*) Time work is a little above.

Kidderminster.—In 1873 we rose to 6½*d.* per hour.
„ '75 „ 7*d.* „
„ '78 we fell to 6¾*d.* „

Liverpool.—The rate of wages up to 1875 was 7¾*d.* Then in 1876 it rose to 8¼*d.*, again it rose in 1878 to 9*d.* per hour, now it is down to 8*d.* per hour.

Luton.—Bricklayers and carpenters previous to 1879 we used to get 5½*d.* per hour, but from that time we had 6*d.* per hour. As regards the straw hat trade it is getting so bad that those who are in work cannot scarcely get common necessaries.

Norwich.—Average from 18*s.* to 25*s.* Formerly they were paid by the day, and now they are paid by the hour.

Reading.—For piece work there has been but a slight difference in wages, as the employers will not pay more if they can possibly avoid it, and as a natural consequence the work is scamped and slighted in every conceivable way, and oftentimes the work that in former times would have employed three men is now got over somehow or other by one man, and oftentimes is so bad, both in quality of work and materials, that the builders have scarcely time to get away from it before it is down again, which fact speaks strongly in favour of the work being properly superintended by practical men, not as it is now, by a lot of cobblers, harness makers, schoolmasters, and, in fact, every class is represented but the ones that ought to be in that position, thus making it bad in both quality and workmanship, thus making it worse for both, for both employers and employées, and worse for the property owners themselves, because they have no safeguard, no guarantee, that the work will be done in an efficient manner, and oftentimes they will stop projected works for that sole reason, unless it is people who can pay for the superintendence themselves.

Shrewsbury.—About 1½*d.* per hour.

Wednesbury.—(*b.*) The difference at present in rate of wages is 2*d.* per hour better for workmen.

Wellingborough.—Twenty years ago we were paid 21*s.* per week, now we receive 6½*d.* per hour.

Woolwich.—Several changes, as follows: 7*d.*, 7½*d.*, 8*d.*, 8½*d.*, and 9*d.*, both for piece and time.

But I beg to inform you that the principle of piece or sublet work has a great tendency to reduce the quality of the work, as it causes men to tender one against the other till they find it impossible to perform the work in a proper state.

OPERATIVE STONEMASONS' FRIENDLY SOCIETY.

Blackpool.—The wages are for skilled workmen 2*s.* 9*d.* in the week more at present.

(*a.*) The men work any way at some shops if they are unskilled workmen.

Bury.—Can't be accurate on this without a great deal of reference.

Callington.—For piece work 30 per cent. lower.

Cheltenham.—(*a.*) None at all, the men work harder.

(*b*). Some get 7*d.* per hour, down to 6*d.* per hour.

Chesterfield.—Up to 1875 1*l.* 10*s.* per week; from 1875 to 1878 got up to 8½*d.* per hour; dropped to 8*d.* in 1879, to 7½*d.* in 1880.

Chester-le-Street.—From 1865 to 1870 our trade has worked by piece and by the day at the rate of 4*s.* 4*d.* per day. Since 1870 we work by the hour, from 6½*d.* to 7*d.* per hour.

Dalton-in-Furness.—For piece work the rate has been reduced one-half exactly, and it is the men's own fault. For day or hour work the rate is very near what it was twenty years ago; there has been fluctuations, sometimes higher, sometimes lower, but the last few years never lower than they are at present.

Doncaster.—From 1865 to 1875, 1*l.* 10*s.* per week; from 1875 to 1879, 8*d.* per hour; 1*l.* 13*s.* per week; from 1879 to 1885, 7*d.* per hour; 1*l.* 11*s.* 6*d.* per week.

Goole.—One penny per hour.

Grantham.—

Keinton.—Advance.

London.—(*a.*) Unable to answer.

(*b.*) From 8*d.* to 9*d.* per hour.

Longridge.—(*b.*) For time work, 5*s.* per day twenty years ago. Ten years ago 9½*d.* per hour.

Newcastle-on-Tyne.—Twenty years ago wages were 4*s.* 6*d.* per day.

(*a.*) Gradually increased, reaching 6*s.* 4*d.* per day in 1877.

(*b.*) Were reduced in 1880 to 7½*d.* per hour; rose again in 1883 to 8*d.* per hour.

Nottingham.—(*b.*) Twopence per hour altogether, given at different periods.

Over Darwen.—(*b.*) The wages now are about the same that they were about twenty years ago; but from 1875 to 1880 they advanced, and have since been reduced to the present rate.

Penryn.—(*a.*) and (*b.*) Both remain about the same.

Shepton Mallet.—About 3*s.* per week increase.

Whitworth.—Two shillings and fourpence per week more now than twenty years since.

Wolverhampton.—For time work an advance of ½*d.* per hour and a reduction of ½*d.*

STONE CARVERS' TRADE ASSOCIATION.

London.—(*b.*) About the same.

AMALGAMATED SOCIETY OF CARPENTERS AND JOINERS.

Armagh.—Wages have been increased 4*s.* per week during the last twenty years.

Bedford.—We have gained 6*s.* 3*d.*

Blyth.—(*a.*) Piece work has been entirely abolished in this district, as we consider it detrimental to interests of our trade.

(*b.*) For time work, the rate of wages has increased during the last twenty years from 7*s.* to 8*s.* per week.

Boston.—No change.

Brondesbury.—(*a.*) Considerably reduced.
(*b.*) Downward tendency.

Buckhurst Hill.—(*a.*) Piece work not so well paid as twenty years ago.

(*b.*) Improvement on the hour 2½*d.*

Burnley.—(*a.*) One farthing per hour.

Buxton.—(*b.*) Ten years ago, in 1875, the wages were 33*s.* per week for 49½ hours; 1877 were dropped to their present price, 30*s.* per week, 49½ hours.

Canterbury.—2½ per cent. rise.

Cardiff.—In 1867 wages was 6¾*d.* per hour.
„ '70 „ 7½*d.* „
„ '78 „ 8*d.* „
„ '79 „ reduced to 7½*d.* per hour.

Chester.—Four shillings per week advance.

Chorley.—Twenty years ago 26*s.* per week was paid, now we receive 1*l.* 14*s.* –½*d.*

Doncaster.—From about 1*l.* per week to the present wage of 1*l.* 11*s.* 6*d.*, almost altered to all figures between.

Dundalk.—There has been an increase of 6*s.* per week on time work in this last twenty years.

Dundee.—(*a.*) In the joiner trade in this district there is a little, if any, piece work.

(*b.*) Previous to the introduction of the fifty-one hours per week, the house building branch was paid 1*l.* 1*s.* per week. For some time afterwards the same rate was paid for the fifty-one hours. Afterwards the wages took an upward tendency, but being very gradual, it was in 1872 that they reached 7*d.* per hour. Since that time I am able to give the dates of the various increases and reductions. In May, 1873, raised to 8*d.* per hour; 18th November, 1878, reduced to 7*d.* per hour; 3rd February, 1879, reduced to 6*d.* per hour; April, 1882, raised to 6¼*d.* per hour; April, 1883, raised to 6¾*d.* per hour; 13th July, 1884, raised to 7*d.* per hour; at which last figure they nominally remain, although on account of so many men in the market, very few are now being paid that amount. In factories and iron foundries joiners' wages have been generally 1*s.*

or 2*s.* per week less than the above. The joiners employed in shipbuilding yards are generally paid ¼*d.* per hour less than those in the house building branch, but at the present time their wages are only 5¾*d.* per hour.

N.B.—I should perhaps have mentioned in a previous question that, out of the four shipbuilding yards in Dundee, one has been virtually closed during the past six months, one has been only working thirty-nine hours per week, and the remaining two forty hours per week during the same period.

Edinburgh.—Below the average.

Grantham.—(*b.*) Average about 4*s.* per week more money.

Govan.—Our wages have been rising and falling, according to demand, from 6*d.* per hour to 8*d.* per hour.

Hammersmith.—(*a.*) It is impossible to give an account of the changes made during the last twenty years in piece work prices, as they vary according to the grinding nature of employers and the pliability of *employées;* but of this I am assured (viz.) that less is now being paid in numerous cases than was the case twenty years ago, notwithstanding the increase of wages paid per hour, as depression in our trade affects these prices through competition far more than it does the hour work.

(*b.*) Time work has increased from 8*d.* to 9*d.* per hour.

Harrogate.—From the years 1865 to 1875 the amount per hour was 6½*d.*, and from 1875 to 1878 the amount was 7½*d.*, and from the last named date to the present it has been 6½*d.*

Hounslow.—I have no means of ascertaining the rate of wages twenty years ago, but I should certainly say they had increased at least 2*d.* per hour.

Ipswich.—(*a.*) None. (*b.*) An increase of 4*s.* 11*d.* per week.

Lisburn.—(*b.*) About 8*s.* per week of a rise.

Liverpool.—(*b.*) Advance ½*d.* per hour in 1873, and a reduction of ½*d.* per hour in 1880.

Margate.—(*a.*) Slightly reduced through competition.

(*b.*) From 6*d.* per hour to 8*d.*

Norwich.—During the last twenty years the rate of wages in our district has risen from 4½*d.* to 6½*d.* per hour. We do not recognise piece work, although it is done in the district, chiefly in the church and school furniture line, at a very low price, which is below our recognised rate of wages.

Norwich.—Maintained.

Nottingham.—We do not allow piece work, what I mean we do not favour it; it is almost impossible in the branch we belong to to adopt piece work to a great extent. With regard to the rate of wage in Nottingham, it is about 12*s.* per week more now than it was twenty years ago; it has been increasing little by little all these twenty years till June this year, when we lost 2*s.* 3*d.* per week.

Plymouth.—About twelve ago, 24*s.* to 27*s.* per week; about eight years ago to 29*s.* 3*d.* per week.

Preston.—

From 1868-74, 28*s.* per week	From 1876-80, 35*s.* per week
„ '74-76, 32*s.* „	„ '80 up to date, 31*s.* per week

(*a*) Piece work not recognised.

Reading.—For time work an increase of 1*d.* per hour.

Rugby.—(*a*) Nil.

	s.	*d.*		*s.*	*d.*
(*b*) 1865	22	6 day	1875	31	2 hour
'68	25	6 „	'76	33	– „
'70	27	– „	'77	35	4 „
'73	28	3 hour	'79-85	33	– „
'74	29	5 „			

Shifnal.—The wages have risen during the last twenty years; in 1865 they were 22*s.* per week, in 1885 they are 28*s.* per week.

Shipley.—

	£	*s.*		£	*s.*
(*b*) 1860	1	5 per week	1880	1	5 per week
'70	1	10 „	'85	1	8 „
'75	1	13 „			

Southall.—(*a*) Piece work not acknowledged.

(*b*) Time work—

1865	6½*d.* per hour	1875	7½*d.* per hour
to 1868	7*d.* „	to 1880	8*d.* „

Southport—One advance and two reductions for time work.

Stratford-on-Avon.—

Sunderland.—(*a.*) Not recognised.

(*b.*) In the house building trade in 1865 the wages were 28*s.* per week. In the ship building trading in 1865 the wages were 30*s.* per week.

Taunton.—In the year 1865 the average rate of wages was 17*s.* per week. In 1870 it rose to 20*s.* per week. In 1880 up to the present time it is 25*s.* per week.

Tewkesbury.—(*b.*) About 1½*d.* per hour higher now.

Warrington.—(*a.*) From 7¼*d.* to 8*d.* per hour.
(*b.*) „ 8*d.* „ 7¼*d.* „

GENERAL UNION OF OPERATIVE CARPENTERS AND JOINERS.

Charlesworth.—(*b.*) Makes our wages 5*s.* 6*d.* more now than it was twenty years since, there being no piece work done by the men; not allowed on generally.

Hyde.—(*a.*) 1868 it was 6*d.* per hour.
'69 „ 7*d.* „
'84 „ 8*d.* „ till 1879.
'79 to 1885 it is 7½*d.* per hour.

The above is for skilled workmen, and you can have unskilled at any price from 4*d.* per hour.

Loughborough.—(*b.*) 50 per cent. increase.

Manchester.—There has been several changes, but I have no means of tracing them.

Retford.—twenty years ago paid by the day; average from 22*s.* to 24*s.* a week.

Runcorn.—From 1866-72 was 1*l.* 8*s.* –*d.* for 55½ hours
„ '72-75 „ 1*l.* 10*s.* –*d.* „
„ '75-85 „ 1*l.* 13*s.* 6*d.* „
(*b.*) For time work.

Stockport.—The rate of wages twenty years since were 6⅝*d.*, and the wages have advanced at different times to 8*d.* per hour, and have receded to (7¼*d.*) sevenpence farthing per hour, which has been the rate of wages for the past five years for skilled workmen only; unskilled according to ability.

Wigan.—It is about 7½*d.* per hour on the average, but in 1875 and 1876 we were getting 8*d.* per hour.

AMALGAMATED SOCIETY OF HOUSE DECORATORS AND PAINTERS.

Swansea.—In 1874 there was an increase of wages to the extent of 4*s.* per week of 54 hours, which has continued in operation up to the present time.

UNITED OPERATIVE PLUMBERS' ASSOCIATION OF GREAT BRITAIN AND IRELAND.

Liverpool.—Wages altered from 33*s.* per week all the year round to present rate of 31*s.* 8*d.* in winter, and 36*s.* 8*d.* per week in summer.

ALLIANCE CABINET MAKERS' ASSOCIATION.

Bath and Combe Down.—There has been very little change in the rate of wages for time work during the last twenty years; not more than 2*s.* per week has it increased since that time.

(*a.*) With regard to piece work it is regulated according to the amount of work done by the machines, which is very considerable. In some instances the machines do one-half the work.

Leicester.—(*a.*) Owing to a larger introduction of machinery, I do not think the piece work is any better paid for, if so well, as it was, because at every fresh innovation or improvement to lessen labour a corresponding amount is deducted from the price paid for the article.

(*b.*) For time work there is a considerable advance in the last twenty years, for whereas men used to receive about 24*s.* to 28*s.* per week of about 58 hours, they now get at least 32*s.* or 33*s.* for 56 hours. In this I am referring to better class men, for there are plenty working at from 1*l.* to 28*s.* per week, and thankful to get even that.

GOLD, SILVER, AND METAL BEATERS.

London.—(*a.*) Decreasing.

AMALGAMATED SOCIETY OF GILDERS.

London.—(*a.*) An increase of about 15 to 18 per cent.

UNITED COCOANUT FIBRE MAT AND MATTING WEAVERS' TRADE SOCIETY.

London.—There has been a reduction of 30 per cent.

POWER LOOM WEAVERS' ASSOCIATION.

Ashton-under-Lyne.—In this district there has been a general reduction of 15 per cent. in the price paid for weaving; in some cases as much as 33 per cent.

(*a.*) All piece work.
(*b.*) We do not take into account.

Darwen.—

Todmorden.—By the piece, at about an average of 15 to 20 per cent. below the wages paid for weaving for twenty years preceding the year 1878.

POWER LOOM OVERLOOKERS' SOCIETY.

Blackburn.—We have suffered a reduction of 10 per cent.

RIBBON WEAVERS' FRIENDLY SOCIETY.

Congleton.—The rates of 1860, except for three years, 1870-73, never reached. Any price offered has been accepted lately.

AMALGAMATED OPERATIVE COTTON SPINNERS' ASSOCIATION.

Over Darwen.—This query will require to be distinguished as between rates of prices and rates of wages. Many advances and reductions have been made in the rates of piece prices during the past twenty years, but the net result to the operative is a reduction of 15 per cent. in his prices for piece work as compared with those obtaining in 1865. Time work (piecers and creelers), which is paid for out of the gross earnings of the spinner, was also advanced or reduced at each successive change in the rates of piece prices, but yet the earnings of time workers have, during the whole of the period under review, experienced a gradual upward movement, so much so that at the beginning of the current year the difference in favour of the time worker, and leaving out of sight the reduction in the legal factory week, will vary from 8 per cent. to 12 per cent. The rate of wages of the spinner has likewise improved to a like extent in the twenty years under examination, owing to improvements in machinery, the greater speed at which it is worked, and the closer supervision of all details of management, coupled with a degree of discipline unknown to the workers of twenty years ago.

SHAW CARD AND BLOWING ROOM ASSOCIATION.

Shaw.—There has been three reductions in our trade during the last twenty years at 5 per cent. on every occasion, both for piece work and day work.

MOSSLEY MALE AND FEMALE CARD AND BLOWING ROOM ASSOCIATION.

Mossley.—Reduction of 15 per cent.

SOCK AND TOP SOCIETY.

Leicestershire.—From 1865 to 1875 we obtained three advances in our wages, of an average of 11 per cent. each time, besides abolishing a system of frame rents, which was a gain to the workmen of about 4*s.* per week. This latter action was afterwards secured to us by Parliament. See A. Pell's Bill carried in 1874. Since 1875 we have had two reductions in wages of an average of 10 per cent. each.

(*a.*) I should say the increase left to us for piece work is about 6*s.* per week to a good quick hand.

(*b.*) We have no time hands.

In the old times our wages were wretchedly low, and with all our commercial prosperity of the last twenty-five years we could now only barely live if we had plenty of work. See Thomas Cooper's "Autobiography."

ELASTIC WEB WEAVERS' ASSOCIATION.

Leicester.—The rate of wages is quite 50 per cent. lower in piece work; time work being only recently introduced, has not changed materially.

JOURNEYMEN HATTERS' FAIR TRADE UNION.

London.—None in price per hat, but employers want twice as much work for the same money.

AMALGAMATED SOCIETY OF BOOT AND SHOE MAKERS.

Aberdare.—We had only one change of wages, and that was in 1872; we had a rise of 15*s.* per cent. through, but since it been taking back, and more with it, with most of them; we are only three that claims the wages of 1872 at the present time.

Farnworth.—There has been one change of wages in our district this last twenty years, and that was for the better. It is in piece work; the work that a man would draw a 1*l.* for twenty years ago, would run him 1*l.* 5*s.* now. We have no statement for time work. I have few words more to say on the co-operative which I will not have room for further on, so I will say it here. This co-operative in Farnworth, with its six branches, draws from 17,000*l.* and upwards per quarter, which leaves all business with a quiet trade; it does not produce to our inland revenue one-fifth what it would do if all that business was done by free traders, as you will scarcely see the postman leave half-a-dozen of letters a day in it. Again, our licensing income is affected by it, if all this money was worked in free trade there would be six times the amount received that there is received from the co-operative. Again, they scarcely ever trouble our offices for a telegram, which would be double what it is in income if we had free trade. Again, these little shopkeepers that pay 20*l.* a year rent pay income tax, and I know some of them not drawing 10*l.* a week, and himself and his son working. Now all shopkeepers grumble very much, and think it very bad that the co-operative, with 17,000*l.* income per quarter, is free from income tax, and still a commercial traveller cannot get an order in a place of this sort; the co-operative does a deal of harm to Blackpool and such places on the sea-coast in summer.

Penrith.—Our last advance was in 1867.

Stockport.—The change of wages has been 5 per cent.

UNITED SOCIETY OF JOURNEYMEN CURRIERS.

London.—Not much change. In some cases men are working for less than ever.

DUBLIN TYPOGRAPHICAL PROVIDENT SOCIETY.

(*a.*) 10 per cent. increase.
(*b.*) 10 ,,

LEEDS TYPOGRAPHICAL SOCIETY.

Leeds.—From 28*s.* to 32*s.* per week for time work. In piece work an average rise of ½*d.* per 1,000 types set up, the price for which ranges from 6½*d.* to 8½*d.* according to size of type.

LONDON SOCIETY OF COMPOSITORS.

There have been only two advances of wages in the metropolis since 1848, one in 1866 and the other in 1872.

(*a.*) In 1866 an increase of one halfpenny per 1,000 ems, equal to $8\frac{1}{3}d.$ per cent. In 1872 a further increase of one halfpenny per 1,000 ems, equal to $7\frac{3}{4}$ per cent. In both cases these increased piece prices were obtained on book and jobbing work only, no increase having been obtained in the prices paid for daily and weekly newspapers, either in 1866 or 1872, Parliamentary work being also excluded from participating in the advance of 1872. In 1874 the principle of 3*d.* per hour extra for overtime to piece hands was for the first time admitted on weekly newspapers.

(*b.*) In 1866 the minimum "establishment" wage was increased from 33*s.* to 36*s.* per week, at which rate it has since remained.

READING PRINTERS' RELIEF ASSOCIATION.

(*a.*) For piece work, none.

(*b.*) For time work, the wages used to be twenty years ago 24*s.* per week; now, the town price is quoted at 28*s.*; but in the cases of old servants some get 30*s.* and 32*s.*

SALISBURY TYPOGRAPHICAL SOCIETY.

There has been no change in the rate of wage worthy of notice.

WEXFORD TYPOGRAPHICAL SOCIETY.

Three shillings per week of an increase.

TYPOGRAPHICAL ASSOCIATION.

Aylesbury.—(*a.*) $5\frac{1}{2}d.$ to 1872; 6*d.* from 1872 to present time.

(*b.*) Ditto, time work.

Bristol.—In time work an advance of 2*s.* per week was obtained by all the branches.

Burnley.—(*a.*) As far as can be gathered, an increase of 10 per cent. only has taken place in the wages of this town during the period mentioned in the question, so far as regards time work.

(*b.*) No alteration has ever taken place in "piece" prices, not having been established over so long a term.

Cardiff.—(*a.*) For piece work there was an increase of 10 per cent. in 1872, and a decrease of 10 per cent. in 1879.

(*b.*) For time work an increase from 21*s.* to 24*s.* in 1865; an increase from 24*s.* to 27*s.* in 1870; and an increase from 27*s.* to 29*s.* in 1874.

Derby.—From 26*s.* to 30*s.*

(*a.*) In proportion to above.

Gloucester.—An increase from 24*s.* per week to 26*s.*

Guildford.—From deducting on piece one-fourth to one-fifth five years ago, and 'stab from 27*s.* to 30*s.*

Halifax.—(*a.*) An advance equal to 1*d.* in the shilling.

(*b.*) An advance from 25*s.* to 30*s.* per week. The wages paid twenty years ago (especially in the jobbing department—time work) were admittedly—even by most employers—considered very low in proportion to other trades less skilled, there having been no advance previously for at least twenty years. The employers consequently acceded to the request made for an advance with little or no demur.

Hartlepool.—Several offices in the town have not increased the wages at all during the last twenty years. Twenty years ago, the wages of the town were 26*s.* per week. The Society wages in the town at present are 28*s.* per week. Piece prices have not been increased at all.

Huddersfield.—(*a.*) Formerly there was no piece work in this district in the printing trade.

(*b.*) The rate of wages for time work have risen from 1*l.* 6*s.* to to 1*l.* 10*s.* per week. The foregoing answer does not apply to the generality of printing offices in this district, as the great majority of them are outside the pale of our association, and the work is, to a great extent, produced by boy labour.

Lancaster.—In 1872 an advance of wages was granted, namely, of ½*d.* per 1,000 ems for piece work (from 5*d.* to 5½*d.*). For time work an advance of 2*s.* per week was made (from 24*s.* to 26*s.*), together with a reduction of hours of labour. In 1875 a second advance of 2*s.* per week was made to time hands only, making their present wages 28*s.*

Liverpool.—(*a.*) and (*b.*) For time work the advance has been from 6*d.* to 8*d.* per hour for general or jobbing printers. The piece prices have only been slightly altered to make them in proportion.

Maryborough.—Up to 1872 for twenty years the weekly rate of wages for compositors was 1*l.*

(*a.*) On piece work 1*s.* 7*d.* per 100 lines of brevier.

(*b.*) In 1872 (November) Mr. Talbot, the proprietor, raised the weekly wages for compositors to 1*l.* 2*s.* And he raised the price per 100 lines of brevier from 1*s.* 7*d.* to 1*s.* 9*d.*

Middlesbrough.—Twenty years ago the wages were only 1*l.*, but now 1*l.* 10*s.* for time work.

Newry, co. Down.—(*a.*) Ten per cent. increase.

(*b.*) Ten per cent. increase. But at the same time there is less employment, explained in following question.

In the past twenty-five years the work has increased tenfold, but this is to be accounted for through the introduction of steam printing. I do more business now than five establishments executed twenty years ago; but there is a corresponding reduction in prices.

Penrith.—

Preston.—(*a.*) Piece work on newspapers the same rate now as twenty years ago.

(*b.*) Time work 1*s.* per week advance.

Rugby.—(*b.*) Wages have risen from 22*s.* to 27*s.* per week.

Scarborough.—Wages have increased from 24*s.* to a minimum of 28*s.* per week.

Sligo.—(*a.*) A rise of 4*d.* per 100 lines of brevier.

(*b.*) „ 4*s.* a week.

Southport.—(*a.*) 1874 was the year piece work was inagurated in Southport. At that period it was 7*d.* to 7½*d.* per 1,000 letters; now it is 7½*d.* to 8*d.* per 1,000 letters. Fifteen years ago the men worked 54 hours per week for 28*s.*; at the present time the hours are 51, and the wages 34*s.* per week.

Stafford.—(*a.*) Downward tendency.

(*b.*) Slight increase.

Sunderland.—The change in the wages of the printing profession during the last twenty years is scarcely worth mentioning, 1*s.* a week advance.

Wigan.—(*a.*) Farthing per 1,000.

(*b.*) Two shillings per week.

York.—(*a.*) ½*d.* per 1,000 for setting type on piece increase.

(*b.*) Weekly wages increased from 25*s.* to 28*s.* (54 hours.)

Scottish Typographical Association.

Ardrossan.—

Ayr.—(*b.*) From 18*s.* to 26*s.* per week.

Dundee.—An increase of one half-penny per 1,000 ems in the newspaper department, and an advance from 22*s.* to 26*s.* per week in the book and jobbing departments.

Edinburgh.—(*a.*) Piece work has increased on an average of 1*d.* per 1,000 ems composed.

(*b.*) Time work, or established wages, has increased by 5*s.* per week, being 25*s.* per week in 1865, 30*s.* in 1885.

Glasgow.—(*a.*) The average advance on 'stab wages has been 20 per cent.; but on piece work the advance has not probably reached more than 12 per cent.

Hamilton.—(*b.*) Four changes as follows: 22*s.*, 25*s.*, 27*s.* 6*d.*, and 30*s.* per week.

Amalgamated Association of Pressmen.

London.—(*b.*) There has been an increase for time work from 33*s.* per week of 63 hours, to 36*s.* for a week of 54 hours.

(*a.*) The piece prices have advanced in about the same proportion.

LONDON CONSOLIDALED SOCIETY OF JOURNEYMEN BOOKBINDERS.

(*a.*) An increase of 2*s.*, and a reduction of the hours from 60 to 54 as a week.

WEST BROMWICH, OLDBURY, TIPTON, COSELEY AMALGAMATED ASSOCIATION OF MINERS.

Tipton.—(*a.*) Piece work is regulated by the day wages.

(*b.*) During the last twenty years the wages have varied at different periods, viz. :—

	s.	*d.*		*s.*	*d.*			*s.*	*d.*		*s.*	*d.*	
From	4	6	per day to	5	–	per day	From	3	–	per day to	2	9	per day
„	5	–	„	5	6	„	„	2	9	„	3	–	„
„	5	6	„	4	6	„	„	3	–	„	3	4	„
„	4	6	„	3	6	„	„	3	4	„	3	8	„
„	3	6	„	3	–	„	„	3	8	„	3	4	„

In 1884 to the present time, 1886.

WEST CUMBERLAND MINERS' ASSOCIATION.

Maryport.—The change of wages have been for piece work as follows :—

(*a.*) 1868	10	per cent. reduction
(*b.*) December, 1871	5	per cent. advance
February, 1872	5	„
June, 1872	5	„
July, 1872	10	„
August, 1872	10	„
September, 1872	10	„
Local and extras	11	„
	56	
March, 1874	10	per cent. reduction.
May, 1874	7½	„
March, 1875	10	„
November, 1875	10	„
August, 1876	8	„
„ '77	10	„
„ '78	10	„
„ '79	5	„
	70½	

See sliding scale table for the adjusting of wages since 1879.

Day work has not been reduced as much as piece work, and it has not risen so high in prosperity.

BAKERS' OPERATIVE PROTECTIVE SOCIETY.

Glasgow.—Have, I think, answered this already; piece work is nearly unknown, I believe; in some mining districts where co-operative stores exist it is to be found, but not here.

PHILANTHROPIC SOCIETY OF COOPERS.

London.—An advance of about 10 per cent. on prices; but this is counterbalanced by the improved quality of work, and the inferior quality of the timber imported.

INTERNATIONAL UNION OF CORK CUTTERS.

London.—None.

DRESSMAKERS, MILLINERS, AND MANTLE MAKERS' SOCIETY.

London.—(*b.*) Wages have risen from 6*s.* to 18*s.* per week; wages paid twenty years ago were from 6*s.* to 12*s.* per week. At the present time some employers are offering less wages to those who will accept them.

FLINT GLASS MAKERS' SOCIETY OF GREAT BRITAIN AND IRELAND.

Dublin.—The rate of wages has gone down very much within these last twenty years; men could earn 2*l.*, they are now getting 15*s.* a week.

TOBACCO STRIPPERS MUTUAL ASSOCIATION.

Whitechapel.—A slight advance to those left in work, but there is scarcely half the number employed that used to be.

WATERMEN AND LIGHTERMEN OF THE RIVER THAMES.

London.—In 1872 the employers conceded 6*d.* per day and 6*d.* per night in advance. There is now, however, signs of some reduction being agitated.

EDINBURGH TRADES' COUNCIL.

Edinburgh.—In many trades there has been an apparent increase of wages, but the real wages are lower now than for many years.

SUNDERLAND TRADES' COUNCIL.

Sunderland.—Advances in majority of trades.

AGRICULTURAL ENGINEERS' ASSOCIATION.

(*a.*) For skilled labour, above.
(*b.*) For unskilled labour, considerably above the average.

BLEACHERS', FINISHERS', AND DYERS' ASSOCIATION.

Bolton.—For the former fifteen years a slight increase, but during the last five years a falling off to the extent of 7½ per cent.

(*a.*) For piece work strictly in accordance with the above.
(*b.*) Little if any change.

III. *Chambers of Commerce. Replies to Question* 12 *of Circular.*

Q. 12. Is the rate of wages in relation to service rendered, and to the quality and quantity of the work produced (*a*) for skilled, and (*b*) for unskilled labour, in your district, above or below the average of the last twenty years?

Aberdeen.—Above, both for skilled and unskilled labour.

Barnsley.—(*a.*) Above the average.
(*b*) About the same.

Batley.—About the same.

Belfast.—The present rate of wages is slightly below the average of the last twenty years. The high average during that period is accounted for by our answer to query No. 10.

Birmingham.—(*a.*) Maintains its price.
(*b.*) Below the average.

Birstall, near Leeds.—(*a.*) Below.
(*b.*) Below.

Bristol.—The rate of wages at present for both skilled and unskilled labour in this district is above the average of the last twenty years.

Belfast.—If this question refers to purely local circumstances affecting our district alone, we would reply, No; on the contrary, we have local advantages which should enable us (other things being equal) to successfully compete with or surpass any other district or country in linen manufacture. On the other hand, if we are not to confine our reply to local circumstances only, we would say the present depressed state of the linen trade is partially due to the fact that the excessive profits made in the linen trade during the years in which the cotton trade in Lancashire was suffering from the cotton famine caused by the American civil war, led to an increase in the power of production far greater than could be absorbed by the regular wants of even a moderately increasing trade when cotton resumed its former position.

Cleckheaton.—We think the following trades can fairly be described as depressed, viz.:—

Machinery and Engineering.
Card Clothing (practically a portion of machinery).
Leather.
Coal and Iron.
Chemicals.
Building.

Bradford.—

Cardiff.—Above.

Cleckheaton.—The rate of wages in our textile factories is maintained at a fair average, while the rate in the industries enumerated in No. 6 is under the average.

Dewsbury.—Although during the last few years a slight reduction has been made in wages, they are still both for skilled and unskilled labour above the average of the last twenty years, especially considering the fact that the hours of labour have been reduced.

Dublin.—

Dudley.—Somewhat less.

Dundee.—The rate of wages is at present lower than it has been for the past ten or twelve years, and also slightly lower than the average of the past twenty years. This is general, but it applies to both skilled and unskilled labour.

Exeter.—The rate of wages for skilled labour as well as unskilled has considerably risen in the last twenty years.

Falmouth.—Except as to miners, for both it is above the average of the last twenty years. The quantity of work performed is decidedly less.

As to miners, the average wages of *tut* work, *i.e.*, piece workmen, has been less during the last five years. Extracts from the books of three of the principal mines of Redruth and Camborne district show the average to be for—

	For 4 weeks.		
	£	*s.*	*d.*
1875	3	14	4
'80	3	16	4
'85	3	10	–

and for skilled labour in mines the same remark applies.

Glasgow.—

Gloucester.—The rate of wages has increased during the last twenty years, and the service rendered is probably somewhat less than formerly.

Greenock.—1. Sugar refining. Above in respect of rate of weekly wages, but below in proportion to quantity of work.

2. Shipbuilding, &c.—The rate of wages both for skilled and unskilled labour is below the average of the last twenty years.

3. Shipowning.—Sailors' wages are above the average of the last twenty years, although many seamen are unemployed.

Halifax.—Above the average.

Hartlepools.—The rates of wages is higher both for skilled and unskilled labour than the average of the last twenty years.

Heckmondwike.—The tendency in wages has been downward, but there has been no disposition to take advantage of the opportunity presented by the prevailing depression to reduce wages on the part of the employers.

Huddersfield.—The shorter hours for labour of all kinds, and, owing to more efficient machinery, the increased quantity and quality of the work turned out by each workmen have much to do with this question.

Notwithstanding these facts, however, the wages earned are above the average of the last twenty years, particularly in the case of skilled workmen.

Hull.—

Ipswich.—

Leeds.—Notwithstanding the shorter hours of labour the rate of wages per week is, with few exceptions, higher now than the average of the last twenty years.

Leicester.—

Leith.—

Liverpool.—

SHIPOWNERS' ASSOCIATION.

Rather above the average for both classes of labour.

GENERAL BROKERS.

Unskilled labour rose from 3*s.* 6*d.* to 4*s.* 6*d.* per day in 1870, and is now 4*s.* to 4*s.* 6*d*; but owing to the large steamships and the crowd of single-ship companies, fostered by the Limited Liability Acts, discharging and loading continuously, day and night, each concern having its own stevedores, lumpers, &c., the number of labourers constantly employed is smaller in proportion to the increased population than it used to be, thus reducing the average of each man's weekly earnings.

SUGAR REFINERS.

The rate of wages is above the average of the last twenty years; the quantity and quality of the work is about the same, both as regards skilled and unskilled labour.

SEED CRUSHING.

Wages of skilled and unskilled labour are about an average of 10 per cent. higher than they were twenty years ago. We know from observation of our own men that their condition is materially improved. They have better food and better clothing, and, so far as the working people in our trade are concerned, the depression in trade has not touched them very much. Occasionally the crushers have had to resort to short time, but they did so sometimes from causes having no relation to the badness of trade, and short time never lasted seriously.

WATCH MANUFACTURER.

The wages have been pretty well wiped out, because the great bulk of the operatives have been wiped out of the trade.

Luton.—Above for the manufacture of straw hats, &c., below for the making of straw plaits.

Macclesfield.—About the same.

Manchester.—Wages in some cases have been reduced slightly.

Morley.—The rate of wages is higher than the average of last twenty years.

Newark-upon-Trent.—The rate of wages in relation to the quantity and quality of work produced may be considered:—

(*a.*) For skilled labour above; and

(*b.*) For unskilled labour considerably above the average of the last twenty years.

North Shields and Tynemouth.—Wages for unskilled and skilled labour are above the average of the last twenty years.

North Staffordshire.—1866 to 1872. Seven years at a lower rate than exists at present.

1873 to 1879. Seven years at a higher rate than the first seven years and the last six years.

1880 to 1885. The last six years a reduction upon the rate paid in the second seven years, but not so low as in the first seven years.

Coal and iron are paying a lower rate of wages now than they have averaged for the past twenty years.

Nottingham.—

Oldham.—

Ossett.—(*a.*) Skilled labour is at a lower price now than any time during the last twenty years.

(*b.*) Unskilled labour is plentiful now, and at prices considerable below those of any time during the last twenty years.

Portsmouth.—Much above the averege.

Northwich.—

Salt Chamber of Commerce.—Above in both respects.

Southampton.—

South of Scotland.—In relation to service rendered (hours of employment) the rate of wages is above the average of the last twenty years, so far as time paid labour, both skilled and unskilled, is concerned. In regard to price paid labour, the rate is above the average of the last twenty years, and the earnings greater through improved machinery.

Sunderland.—The rate of wages, both for skilled and unskilled labour, is above the average of the last twenty years, except in the glass bottle trade, in which the wages are below the average.

Swansea.—

Wakefield.—(*a.*) Above the average.

(*b.*) An average.

Wolverhampton.—We should say, speaking generally, that the rate of wages both for skilled and unskilled labour, having regard, of course, to improvements of machinery, is equal to the average of the last twenty years; as regards skilled labour, it may be even above it. In other words, we believe that an artizan, if in constant employment in any given trade, is earning at least as much to-day as he would have earned under similar circumstances on the average for the last twenty years. It is doubtful, however, whether, owing to shorter hours, the quantity of work produced for the wages earned is as great as formerly, which is equivalent, of course, so far as the manufacturer is concerned, to the wages being at a higher rate than in former years. This reply, however, is not correct as regards the coal and iron trades, as in such trades the wages are at the present time exceptionally low.

Worcester.—Above the average, both as to skilled and unskilled labour.

Coventry.—The rate of wages in the watch trade, as applied to skilled labour, is something below the average of the last twenty years.

The rate of wages paid in the ribbon trade is much below the average.

There is little unskilled labour employed in either the watch or the ribbon trade.

The bicycle trade, as has been previously stated, is one of recent growth, and has not been in existence twenty years. The rate of wages at the present time is believed to be about the average.

Derby.—Iron. Report 1: "Wages are practically the same as "twenty years ago." Report 3: "Wages are somewhat higher "than they were twenty years since."

Ironwork. Report 6: "Wages have increased about 25 per "cent. in the twenty years."

Report 7: "Skilled and unskilled labour about the same." Report 40: "A slight increase up to 1880, and a corresponding "decrease since that date."

Beer. Report 18: "Wages have increased materially." Report 16: "Increased 12½ per cent."

Cotton. Report 37: "Although the hours of labour have been "lessened, the wages paid for the same amount of work have not "materially changed."

Report 38: "Increased 15 to 20 per cent."

Thrown Silk. Report 24: "The rate of wages is higher now "for 56 hours' work than formerly paid for 60 hours."

Report 28: "Not substantially altered during the period named."

Elastics. "Wages for weaving have decreased from 10 to 20 per "cent."

Colours. Report 30: "Increased 15 per cent." Report 31: "Increased 20 per cent. during the last twenty years."

Carriages. "Wages increased probably 10 per cent., but the "shortened hours of labour have increased the cost of production "from 15 to 20 per cent."

Coals. "Miner's wages higher than twenty years ago."

Edinburgh.—The rate of wages for both skilled and unskilled labour is above the average of the last twenty years.

Hull.—The rate of wages in shipbuilding and engineering is below the average; in regard to other trades the rate of wages has been well sustained, and is in some cases slightly higher; the rate for unskilled labour is about the same.

Kidderminster.—

London.—(*a.*) Wages for skilled labour are higher *per se*, and in relation to services rendered, and hours of labour, considerably higher than previously. Skilled labour further enjoys a greater certainty of regular employment than any other, and in view of lower cost of living, and comparative freedom from taxation, has been very favourably placed during the last few years.

(*b.*) Unskilled labour occupies a much worse position, worthy of the special study of the Royal Commission. The influx of families from the agricultural districts has caused the supply of this class of labour to exceed the demand.

Newcastle-on-Tyne.—The actual present rates of wages for skilled labour is lower than it was four or five years ago; it is still, however, not below the average of the last twenty years, particularly if the shorter hours worked are taken into account, and if the unprecedented cheapness of all the necessaries of life are allowed for; the remuneration for the quantity of labour expended by skilled operatives is now above the average of the last twenty years.

There has been little change in the remuneration of unskilled labour, except indirectly by the shortening of hours and the cheapness of living.

Newport, Mon.—In the coal and iron trades the wages per ton for skilled labour rather above average, but as men are only getting partial employment, their earnings are low. The wages in unskilled labour are rather above the average.

In the timber trades the rate of wages has increased during the past nineteen years 10 per cent. or even 15 per cent. in some cases, the former increase being in unskilled labour, and the latter in skilled labour.

In the building trades the rate of wages is above the average, and in the shipping trade this is also the case, and has been for the last twenty years, both for skilled and unskilled labour; and the necessary skilled labour in connection with steamships has greatly added to the cost of navigation.

Sheffield.—It is very difficult to estimate the rate of wages for skilled and unskilled labour for an average of twenty years, especially when it has, as in the case under consideration, covered violent fluctuations in trade; but, in the opinion of this Chamber, the present rate of wages in relation to service rendered, and to the quality and quantity of work produced is, if measured by money payments, very nearly equal to the average of the last twenty years.

The working classes do not suffer so much from a reduction in the rate of wages as from a reduction in the number of hours during which they can be employed, although in some branches of the trade the rate of wages has no doubt been reduced. "Short "work," however, is their greatest grievance, and this is of course brought about by the present state of depression.

In estimating wages, however, the actual amount paid is not altogether a criterion of value, for the purchasing power of wages at the present time is far greater than it has ever been during the past twenty years.

Walsall.—(*a.*) Above. (*b.*) Above.

APPENDIX B.

[Extracts as to Wages from Mr. Soetbeer's "Materialien," &c., pp. 84 *et seq.*]

Summary of Building Wages.

If we take the yearly average of summer and winter for the above wages, and take the average of the rates from to in cases where a uniform rate is not given, taking the year at 304 working days, then the rate of wages in the last thirteen years compared with the rate in the years 1848-51 is as follows:—

	Average Amount of Wages.		
	1848-51.	1874-78.	1879-86.
	Marks.	Marks.	Marks.
Stone cutters	638·40	1,368·00	1,368·00
"	100·00	198·00	198·00
		1,140·00	1,140·00
Stone setters, 1st class	632·32	180·29	180·29
" 2nd "	100·00	1,048·80	1,048·80
		165·87	165·87
		957·60	957·60
" labourers, 1st class	422·56	226·62	226·62
" " 2nd "	100·00	912·00	912·00
		215·83	215·83
Labourers	367·00	752·40	752·40
"	100·00	204·55	204·55

Payments of the Officials of the Prussian State Railways in the Years 1850, 1860, 1872, *and* 1886.

	1850.	1860.	1872.	1886.
	Marks.	Marks.	Marks.	Marks.
1st Category	—	—	—	—
Average	644	756	1,079	1,123
2nd Category	—	—	—	—
Average	1,086	1,469	1,994	2,199
3rd Category	—	—	—	—
Average	2,496	2,700	3,397	3,659

Expense of Living.

As in the present work, examples drawn from Hamburg are chosen by preference; I give the expenditure by a Hamburg establishment—the General Hospital. Here there are daily about 1,700 people to be maintained, or annually about 620,000 days of maintenance, and there is careful economical management, such as wholesale purchases allow. In this establishment the actual cost of maintenance per person (sick and official staff together) was as follows from 1841:—

	Daily.	Annual.	
	Pf.	Marks.	
1841–50	37·0	134·99	(100·0)
'51–60	42·9	156·60	(116·0)
'61–70	52·2	190·59	(141·2)
'71–75	75·8	276·76	(205·0)
'76–80	89·0	325·34	(241·0)
'81	89·7	327·44	(242·6)
'82	87·4	319·16	(236·4)
'83	86·2	314·48	(233·0)
'84	80·7	295·29	(218·7)
'85	75·0	273·68	(202·7)
'81–85	83·8	306·01	(226·7)

At the end of a paper of the Belgian Minister of State, Pirmez, which appeared in September, 1884 ("La Crise, Examen de la "Situation Economique de la Belgique," Bruxelles), there is a table giving statistics of the total production of coal in the Province of Hainault during the twenty-four years, 1860-83, for each year similarly calculated. There are there engaged between 60,000 and 83,000 workmen, and there is a yearly yield of about 13,500,000 tons of coal. From considerations of space the yearly returns are here compressed into averages for three periods, 1860-71, 1872-76, and 1877-83. On the other hand, from a letter received from the same author, I am enabled to add the corresponding returns for 1885:—

	1860-71.	1872-76.	1877-83.	1884.	1885.
	Frs.	Frs.	Frs.	Frs.	Frs.
Salaire moyen par ouvrier	797	1,173	897	911	796

The figures in the foregoing table speak so plainly that they scarcely need any annotation. With the prices for the single years before us, the extraordinary alterations which the exaggerated rise of prices during the "swindle period," 1871-74, and the depressed prices of late years are brought even more prominently forward, only the averages for periods of several years are the more convincing. If we compare the results of the year 1885 with those of the decade 1860-71, we find that the price of coals per 1,000 kilogs. has fallen from 11·33 to 8·83 frs., and the profit on that quantity from 1·12 frs. to 39 c.; but wages, in spite of the necessary reduction in 1885, have still the same height as in the period 1860-71.

APPENDIX C.

Wages in Cotton Spinning and Cotton Weaving in Belgium.

[From Return as to Wages in Belgium. C.-5269, Sess. 1888. Pp. 14 and 15.]

La Florida Company, Gand.—Average Weekly Wages of Workmen.

COTTON WEAVING.

	1850.		1860.		1870.		1880.		1886.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Weavers	9	7¼	12	–	13	7¼	14	4¾	14	4¾
Warpers	8	9½	10	4¾	11	2½	12	9½	12	9½
Reelers	6	4¾	8	–	8	9½	9	7¼	9	7¼

The best weavers easily earn from 18*s.* 4¾*d.* to 1*l.* per week.

COTTON SPINNING.

	1850.		1860.		1870.		1880.		1886.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Spinners	16	9½	18	4¾	20	–	21	7¼	21	7¼
Carders (superior)	8	9½	9	7¼	10	4¾	10	4¾	10	4¾
" (inferior)	7	2½	7	2½	7	2½	7	7¼	7	7¼
Finishers	4	–	4	9½	4	9½	4	9½	4	9½
Spindle frame workers (women)	5	7¼	7	7¼	8	–	8	9½	8	9½
" (girls)	2	4¾	3	2½	3	2½	4	9½	4	9½
Carding frame workers (women)	} Not		employed		until {		9	7¼	9	7¼
" (girls)	} after		the year		1870 {		4	–	4	–

APPENDIX D.

Mining Wages in Belgium.

[From Return as to Wages in Belgium. C. 5269. Sess. 1888. P. 13.]
John Cockerill & Co., Seraing.

The average rates of wages have been as follows:—

Years.	Under Ground.		Above Ground.		Years.	Under Ground.		Above Ground.	
	s.	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*
1870	2	5¾	1	10½	1879	2	7¼	1	9¼
'71	2	7½	1	8¾	'80	2	7½	1	10¼
'72	3	–	1	9	'81	2	10	1	10½
'73	3	5	2	4	'82	3	–	2	–
'74	3	6¾	2	2	'83	2	10	2	–
'75	3	3	2	–	'84	2	9	2	–¼
'76	2	9¾	1	9	'85	2	7¼	1	11½
'77	2	8½	1	8¼	'86	2	7	2	–½
'78	2	7½	1	9					

Note.—The above are the average rates of wages per day.

APPENDIX E.

Statement of Average Price of Flour per 100 Kilogrammes; Average Wages of undermentioned Classes of Workmen in Belgium; and Quantity of Flour which could be Purchased by a Day's Wages at undermentioned Dates in Belgium.

[From Return as to Wages in Belgium. C–5269. September, 1888, p. 82.]

		1870.	1875.	1886.
Average price of flour	100 kilos.	1*l.* 11*s.* 4*d.*	1*l.* 8*s.*	1*l.* –*s.* 10*d.*
,, rates of wages of rollers	per day	2*s.* 9*d.*	3*s.* 4½*d.*	2*s.* 4½*d.* to 2*s.* 1¾*d.*
Quantity of flour purchaseable by day's wages	kilos.	8·77	12·05	11·34 to 10·26
Ironworkers	daily wages	2*s.* 6¼*d.*	2*s.* 11¼*d.*	2*s.* 4½*d.*
Flour purchaseable by ditto	kilo.	8·03	10·64	11·42
Blast furnace workers	daily wages	2*s.* 2*d.*	2*s.* 7*d.*	1*s.* 9½*d.*
Flour purchaseable by ditto	kilos.	6·88	9·26	8·57

APPENDIX F.

Extract from Report by Mr. J. G. Kennedy, Secretary of Legation at Rome as to Wages in Italy.

[From Board of Trade Journal, February, 1887, p. 151.]

[From the list of factories given in the Official Palistés recently published by the Director of the Statistical Department, M. Bodio, the following averages are taken.]

Occupation.	Daily Wage.				Hours of Labour.
	1874.		1883.		
	s.	*d.*	*s.*	*d.*	
WOOL FACTORY.					
Carders	1	3	2	6	12
Spinners (piece work)	3	–	3	–	12
Dyers	1	5	1	11	12
Twisters (female)	–	8	1	3	12
Warpers „	1	4	1	6½	12
PAPER WORKS.					
Paste makers	1	3	1	5	12
Paper „	1	4	1	10	12
STEARINE CANDLE FACTORIES.					
Skilled workmen	2	–	2	6	12
Ordinary „	1	6	2	–	12
Females (piece work)	1	8	2	3	12
„ (ordinary)	–	10	1	–	12
SILK FACTORY.					
Spinners, 1st Class	–	11	–	[illegible]	12
„ 2nd „	–	10	–	10	12
COTTON FACTORY.					
Spinners (male)	1	6	1	7	12
„ (female)	–	7	–	10	12
Weavers (male)	1	8	2	–	12
„ (female)	–	9	1	–	12
HEMP FACTORY.					
Combers	2	8	2	10	12
Carders	1	4	2	8	12
Spinners	1	8	1	11	12
Rulers (female)	–	9	–	10	12
Spinners	–	9	–	10	12
Aspatrici	–	9½	–	11	12
WOOL AND SHODDY FACTORY.					
Men (piece work)	–	11	1	11	12
„ (regular)	1	–	1	1	12
Women (piece work)	–	7	–	8	12
„ (daily „)	–	5	–	6	12
WOOL FACTORY (1ST CLASS).					
Weavers, 1st class	2	9	4	–	11
„ 2nd „	2	3	3	4	11
Spinners	3	1	4	–	11
Carders	1	3	2	–	11
Weavers (female)	1	2	1	5½	11
Warpers	–	8	1	2	11
Spolatrici	–	11	1	1	11
Twisters	–	11	1	1	11

"In Government arsenals the average of hours of labour per "day, taken through the year, is 10; pensions can be earned.

"The Italian operative may escape direct taxation, such as "income tax, now about *2s. 6d.* in the pound sterling, which spares "incomes under 16*l.* per annum, and grants abatements on incomes "under 32*l.* per annum, but he is heavily affected by indirect "taxation in the shape of customs duties and 'octroi.'

"Spirits and wine, animals fit for food, dairy produce, dried "fruits and 'fungi,' honey; fish, fresh or preserved, &c., &c., all "pay octroi duty. In fact, all articles of food and drink are "charged octroi duty on entrance into walled cities throughout "Italy on Government account, and municipalities have the power "to put extra rates on such articles, and also on any other article.

"The Government octroi duties are fixed, whilst the municipal "octroi duties vary in different cities."

DISCUSSION *on* MR. GIFFEN'S PAPER.

BEFORE the Paper was read—

The Chairman, Frederick B. Garnett, Esq., C.B., said that before proceeding to the business of the evening, he felt it his duty to inform the meeting of the reason why the respected President of the Society, Dr. Balfour, was not present. On Saturday last he (the Chairman) received a note stating that, in consequence of the serious condition of Mrs. Balfour's health, it would be impossible for Dr. Balfour to preside over the meeting; and the next day she departed this life. He thought it would be consonant with the feelings of the Fellows, that a resolution should be passed for conveying to Dr. Balfour an expression of the heartfelt sympathy of the Society in the severe loss he had sustained. Only a short month ago Dr. Balfour was in the chair, and delivered his presidential address, doing so at a considerable sacrifice of personal convenience. He would propose a cordial and sincere vote of sympathy with him in his terrible affliction.

Sir RAWSON W. RAWSON, K.C.M.G., C.B., seconded the motion, which was unanimously agreed to.

(The Paper was then read.)

Professor H. S. FOXWELL said he had been extremely interested in this question of prices, which it had been his duty to inquire into, as a colleague of Mr. Giffen on the Committee appointed by the British Association to consider the methods of ascertaining and measuring variations in the value of the monetary standard. Having read a great mass of literature on the subject, he could scarcely have believed it possible that so original a paper on it could have been written as that which they had just heard from Mr. Giffen. He hoped that the question of the meaning of the word "appreciation" would henceforward be regarded as settled. The expression had always been used by scientific men in a definite sense. It was intended to indicate a rise in the purchasing power of money as expressed in terms of certain selected, representative commodities. Mr. Giffen had said that no one pretended to speak of an absolute appreciation of money; but if the value of money rose in reference to commodities in general they had a right to speak of it in a certain sense as absolute. Mr. Edgeworth had shown that the selection of commodities which various writers had made from time to time was remarkably representative, and it was in fact strange to observe the close coincidence of index numbers constructed on very various principles. That showed that though theoretically an index number might not stand the severest test, it might nevertheless be sufficiently good for public use and for all practical purposes. There could be no question that the value of money had risen, and that the prices of commodities upon the whole had fallen. This was what was meant by the appreciation of money; and all the index numbers, as well as common experience, showed that it had taken place. But the question had been very keenly debated whether this change in the relation of money to commodities was the consequence of some change in the circumstances of production, or of some change in the conditions affecting the currency. In one of the most able and original parts of this paper Mr. Giffen had made a valuable contribution to the settlement of this controversy. He had shown that what they had to compare was not quantities, but rates—the rate of increase of the production of commodities with the rate of increase of the production of money, or the equivalents of money. As he had put it, the comparison from which they inferred changes in the value of money must be not a statical but a dynamical comparison. Now he (Professor Foxwell) was not aware that the rate of increase of production had altered to any remarkable extent, but there could be no question that the production of standard money had positively fallen off. They were justified then in attributing the change in the price ratio mainly to monetary causes. But Mr. Giffen himself, though he has done so much to make this point clear, did not seem to attach much importance to this question of the cause of appreciation. He says in fact that it is almost wholly a question of words. Whether they agreed with him here or not would depend on whether or not they had any remedy to offer for appreciation. He did not wish to underrate the importance of index numbers, which were of the greatest value as throwing light on the facts of the situation. But if all they could do was to measure the appreciation, and express it by index numbers, it was only a matter of mere intellectual curiosity how the appreciation was caused. If, on the contrary, however, they believed that the effects of appreciation were on the whole injurious to society, and that it could be, and ought to be remedied, it then became of interest to discover whether it was, as some alleged, a necessary result of advancing prosperity, or whether it was, as he maintained, the result of ill-judged monetary legislation. Mr. Giffen, adopting a favourite and historic term in English political economy, described the appreciation of money as *natural*. At any rate it was not an ideal condition of things. The ideal state would be that in which money would have a uniform value in commodities, and would not merely serve the function of measuring the transactions of to-day, but also of those intended to take effect at distant dates. He was very glad to observe the criticism in the paper on the views of that eminent writer Tooke, because he thought that far too much weight had been attached to that part of Tooke's writings which dealt with the theory of prices. Tooke's wide knowledge of the details of prices seemed to prevent his clearly discerning the principles which underlay them. His attention was so absorbed by the surface waves of the sea of prices, that he denied the existence of any monetary tides. The theorist was sometimes scouted because of his ignorance of these details. But important as details were in their own sphere, there were some purposes for which they might rightly be neglected. When they were dealing with long periods of years the details neutralised one another, and the tidal movement became the important question. He regarded it as a most serious one. Mr. Giffen had said that the redistribution it involved spelt ruin to individuals. Unfortunately it affected the relations not only of individuals, but of great political classes. Injury to individuals they might possibly regard with complacency, but injury to classes caused social discontent, and this kind of redistribution might spell revolution.

Mr. S. **DANA HORTON** said he sympathised very earnestly with what Mr. Foxwell had said as to the originality of a portion of the paper and as to the importance of the whole, excluding of course questions of governmental policy. He expressed very sincere gratitude to Mr. Giffen for his vindication of the Queen's English, and he hoped that the paper would assist in maintaining the old-fashioned, plain, and sensible meanings of some good English words which science could not well afford to have corrupted.

Professor **ALFRED MARSHALL** thanked Mr. Giffen for his excellent paper, with almost every word of which he agreed. In particular he agreed with what was said in it about the use of the word "appreciation." When we were speaking of the appreciation or depreciation of gold or silver we must always make it clear what were the things in terms of which the appreciation or depreciation was measured. When the term "appreciation of gold" is used alone it should, as Mr. Giffen says, be taken to mean a rise in the general purchasing power of gold, whatever be the causes to which that rise happens to be due. And consistency requires that the same interpretation should be given to the term "appreciation of silver." We only get into confusion and talk in different planes, apparently contradicting one another while we are perhaps really all the while agreed, if we talk in the same breath, as is often done, of the recent "appreciation of gold," meaning thereby the rise in its general purchasing power, and of the "depreciation of silver," meaning thereby the fall in its gold-value. To be consistent we ought to say there has been a slight appreciation of silver, since the general purchasing power of silver has slightly risen. He thought that the recent movements of Indian trade and prices were not as paradoxical as was sometimes supposed. On the contrary, he thought they were in perfect accordance with the old-fashioned Ricardian doctrines properly interpreted. It was said that the "quantity theory" of money was falsified by the fact that prices in India have not risen in spite of the great recent importations of the precious matals. But one of the many qualifying clauses in the doctrine that prices rise proportionately to the increase of money per head of the population, is the condition that there must have been no great change meanwhile in the methods of business. But in fact the methods of business in India are being rapidly revolutionised. Formerly nearly the whole business of the country was carried on by barter and by payments in kind, including labour dues; but now this system is being replaced by a money economy, or *adœration*, to use the term by which historians describe the parallel but much slower change which occurred in England and elsewhere during the middle ages. He had collected evidence of that in the course of inquiries he had been making for some years as to the economic action of custom in India. The reports which he had got from different parts of that great continent of course varied very much in detail, though he might mention in passing that he was inclined to doubt the statement that there had been no considerable general rise in the price of labour in India since 1870; but they all without exception agreed that money payments were displacing payments in kind. This then is the explanation of the absorption of the precious metals by India. The natives now want gold for hoarding in the form of ornaments and in other forms, partly because they are richer than they were, partly because they regard gold as a good investment. They want silver, in some cases perhaps for hoarding, but chiefly to meet the requirements of the new system of buying and selling instead of bartering. This led him to some remarks in support of Mr. Giffen's speculations as to the future course of prices. When barter begins to yield place to a money system, gold is not much in request; the payments are so small as to be best made in silver, or some cheaper material such as copper—the etymological meaning of *adœratio* is a conversion into copper money. At a later stage silver is used, and at a later stage still gold. The saturation point of people's requirements for copper coin are soon reached: in England the poorest classes probably handle more copper coins than any other non-trading classes. The upper artisan and lower middle classes have already reached saturation point with regard to silver; he meant that a further increase of their incomes would lead them to handle more gold but not more silver. In countries in which there is not much use of bank notes, the amount of gold which a non-trading person handles increased rapidly with his income, until his payments became large enough to be made generally by cheques. Then first was the saturation point for gold reached. The only effective plan which he could see for arresting the fall in the gold-value of silver was the increase of artificial substitutes for gold. Silver coin would not do for this purpose, it was too heavy. He felt sure that sooner or later the best solution would be found to be in the use of silver together with gold as the basis of paper money.

Professor F. Y. **Edgeworth** wished to endorse Mr. Giffen's statement that in calculating an index number to express a variation in general prices, it was not likely to make much difference what importance was attached to the different commodities whose changes of price formed the data. This might be tested by taking almost any set of figures which did not very widely diverge from each other, between which, as Mr. Giffen said of prices, there existed a certain "sympathy." For instance, the number of pips on ten cards taken at random from a heap made up of several packs, without court cards, would not differ from the number on ten other cards similarly selected at random more than price-variations differ from each other. If there were forty or fifty such arbitrary figures, the simple average thereof would not be likely to differ much from the mean value obtained by assigning to the given figures "weights" as unequal as those formed by the values of commodities. The principal danger was where a very exceptional change of price coincided with a very large weight. Cotton during the American war afforded a well known example, and Jevons had accordingly modified the returns for cotton for that period. But he (Professor Edgeworth) feared that the public might look with suspicion upon any manipulation of the returns which seemed like what Mr. Giffen had called "jerrymandering." A simple remedy for the difficulty was the use of a sort of average recommended by Laplace, the so-called Median, which Mr. Galton had largely employed in comparing the average heights of different classes. That method was often better for the purpose of "inference" which Mr. Giffen had distinguished from mere "arithmetical statement." The method was not only safer, but easier.

Mr. STEPHEN BOURNE said he failed to see any proof at all that they were suffering from a deficiency of gold. There had been a vast increase in the means of transacting the business of the world without the intervention of currency. Mercantile transactions were now carried on by means of paper and promises to pay, which were transferred from one person to another. There were some points in regard to which he thought Mr. Giffen had not gone on a right basis. There was a general impression that the cost of distribution had very much diminished of late, and so it had in many ways, but, for instance, in the case of "Stores," though it was thought that the cost of conveying the article from the producer to the consumer had been greatly diminished, there was a vast amount of cost of distribution taken upon himself by the consumer, such as omnibus and railway fares, and really the diminished cost of the distribution was more apparent than real. Allusion had been made to the income of the nation, but what was wanted to be known was the aggregate production of a country, and the share which each individual produced. It was well known that there had been a vast increase in the objects upon which the wage earners of the country expended their incomes. It did not at all follow that because an individual at the present moment was receiving the same or a larger amount of wages than he did some years ago, while in the meantime the commodities he bought were cheaper, that therefore he was in a better position, because he appropriated a considerable proportion of his income to the purchase of other commodities. A much larger amount of the income of the lower and middle classes was devoted to amusement and locomotion than formerly. The present system of education too had driven a large number of the wage earners to devote their time to receiving education rather than to adding to the family income. All these things were a drain on the resources of the wage earners. He did not think it was at all proved that the earners of small incomes were in a better pecuniary position than formerly. With regard to index numbers, he thought if Mr. Edgeworth's proposition were accepted it would show that index numbers were comparatively of no value at all, and he did not think it was at all likely that a system of index numbers would ever be arrived at which would govern all transactions.

Mr. A. **Sauerbeck** said he did not think that index numbers could ever give complete accuracy, but they could give an approach to correctness, being checked—as in the case of his own numbers—by quantities on two different systems. He shared Mr. Giffen's opinion that under the present monetary legislation there would be in the long run—on the average of periods—a further decline in prices. When he first published his figures his index number had arrived at 72, and he thought it had already gone too far, but it had since gone down to 69 and 68; in the present year there had been some improvement. On the other hand the production of commodities had been almost stationary since 1883, taking the population into account. As the present addition to the currencies almost corresponded with the increase of population, the consequence must be that for the next few years there must either be more commodities or a better price.

Major P. G. **Craigie** said that the paper to which they had listened well deserved what had been said of it, and suggested new lines of consideration for some of the problems connected with the phenomena attending an appreciation of gold. Mr. Giffen had however warned them from entering that evening on certain collateral questions now attracting attention, and in the discussion of which use would no doubt be made of some of the conclusions now submitted. So far as he himself could judge from his own researches on agricultural wages during the last few weeks (to which Mr. Giffen had alluded), the facts so far as established prevented him from altogether agreeing with what had fallen from Mr. Bourne. His impression was that there was undoubtedly a greater margin now left even to the agricultural labourer than there was a few years ago despite his lowered wages; for prices, even the retail prices of commodities, had fallen more than wages had dropped. Before any confident decision was arrived at upon the exact bearings of comparative records of wages on some of the features of the general question, far more complete statistics were required than were now forthcoming with reference to labour. He was sure all present would support Mr. Giffen and his office if they should see their way to arriving at greater certainty by the collection of more accurate and comprehensive statistics of wages generally.

The Chairman said he was sure whatever difference of opinion existed with regard to other matters, there would be none with regard to the thanks that were due to Mr. Giffen for his most interesting and able paper, He would simply call Mr. Giffen's attention to the fact that the figures relating to income tax assessments published in the Annual Report of the Commissioners of Inland Revenue were exceedingly useful for comparing one year with another, but were very likely to be fallacious when taken as a means of comparison for groups of years. Mr. Giffen had quoted from the first Report of the Trades' Depression Commission the average annual incomes at four different periods; but he was not aware that it was adequately brought out in any evidence before that Commission that such comparisons required to be materially qualified by the consideration, that what was income for income tax purposes at one time was not so at another. Not only had there been an alteration in the limit of exemption, but there had been material variations in the mode of stating the amounts. In 1876 the limit of exemption was raised from 100*l.* to 150*l.*, and the effect of this alone was to take out of assessment to the income tax hundreds of thousands of people hitherto liable, making a difference as estimated at the time of about 25 million £ in the amount of profits assesssed. The lower classes of income had made great progress in the country since that period, and in order to make a fair comparison it might be necessary therefore to add an average of 30 million £ to 35 million £ per annum in the period from 1876 to 1885. There was another item which any one not familiar with the mode of stating the accounts would be likely to overlook. In the column of annual produce of income tax for each year there was a statement of duty recovered which was not assessments, and it so happened that from 1866 to 1875 such items amounted to 333,000*l.*, whereas in the later period, 1876 to 1885, the sum was 897,000*l.* Taking those amounts at the average rates of duty payable during the respective periods, it would be found that in the one case they represented about 19 million £ of profits, and in the other 39 million £. Another consideration in instituting comparisons of profits was the rate of duty, for experience had taught those concerned in the administration of the income tax Acts, to look for lower returns of profits in years when the rate of duty was highest. From 1866 to 1875 the rate of duty was, on the average, lower than at any other period, being 4·1, but from 1876 to 1885 the rate averaged 5·5. The excess in the latter case would make a material difference in the amount of income returned. The only class of incomes not affected by that consideration were those under Schedule E, which generally could not be understated. Another cause in the later period which operated as an apparent but which was not a real depression in the amount of income, was to be found in the allowance granted by Parliament in 1878 in respect of wear and tear and depreciation of machinery, which caused an immediate drop of half a million in the profits assessed, and which loss went on at a progressive rate afterwards. He thought the points he had suggested would raise the average income per head of population in the second period to 18*l.* He was glad to avail himself of this opportunity for expressing, in the name of the Society, the obligations which all who were in the habit of using the figures contained in the Blue Books were under to Mr. C. Turner, the Accountant and Comptroller-General of Inland Revenue, for having withstood the temptation for motives of saving expense to abridge the extent and value of the statistical information annually afforded by the reports of the Commissioners of Inland Revenue.

Mr. GIFFEN (in reply), after acknowledging the vote of thanks, said: Perhaps, Mr. Chairman, you will allow me to begin with yourself. I am quite satisfied that for the purposes of this paper the corrections you have made on the income tax figures quoted were not very material, while as far as they went they would rather have strengthened my view that the fall of prices has taken place without any diminution of income. Your corrections would tend to show rather that instead of there being a diminution of income per head there has been a slight increase. But I should like to say generally about the use of these income tax figures, that for people outside the Revenue department it is a little inconvenient to go into comparatively minute questions. It is best to take the figures broadly. In this very matter, for instance, if we were to correct the figures minutely we should not only have to take into account those matters which the Chairman has mentioned, but perhaps others of which outside the department we have no knowledge. It certainly was true at one time that the amounts returned to income tax were constantly increasing on account of the screw that was applied; and this would necessitate a correction in a sense opposite to that of the Chairman, though to what degree we cannot tell. Again, I may mention another fact which would point to the expediency of a similar correction. It became necessary for me when I was dealing with my paper on "Accumulations of Capital in 1875," to allow for a correction in the figures, because in one year the mode of stating the assessment in Ireland had changed with regard to Schedule B. Instead of stating the net amount assessed, the department all at once began to state the gross amount, and this I think would make a difference of seven millions a year for some years in a direction opposite to the corrections the Chairman now suggests. I am not saying that corrections are out of place, but on the whole, unless one sees very good reason for going into detail, it is best to avoid them, and rather to recollect that one must not use these figures for too fine results. I am not saying but what for other purposes it might be expedient to go into corrections of that kind, and perhaps if I were writing a more strictly statistical paper I might go to the Inland Revenue to see what corrections should be made. But on the whole, for the present purpose, the figures used without the Chairman's corrections are practically as good as we require. Adverting to what has been said by Mr. Bourne, who has been perhaps the most critical of those who have spoken to-night, I must express my regret that Mr. Bourne apparently will persist in keeping to the old confusion arising from the attempt to set a change in the metal against a change in commodities as exclusively accounting for a change in price. When you say there is no evidence of change having taken place in the metal, we can only remind Mr. Bourne and repeat that the whole question is one of "ratio," and that there is no antagonism between the supposed opposites. In addition, I think in the way it is shown in the paper, if you carefully define the terms of your comparison, and see what you are making your comparison with, you can say positively that as between the two periods 1850 and 1870, and 1870 and the present time, there is an obvious and palpable change in the movement of one of the factors, namely, the metal, which you do not observe in the movement of the other factor. As to what are the ultimate causes of the one thing exchanging for the other at a particular ratio, that we do not and cannot know; but all we do is to make the best comparisons we can for the purpose of the discussions in which we engage. Mr. Bourne says instead of speaking of the appreciation of gold, it would be much more correct to speak of the depreciation of commodities: but surely when you come to long comparisons, and when your purpose is to find out in what way you are to convert the money expressions of one time into the money expressions of another time, it becomes very inconvenient to say "a depreciation or appreciation of commodities." Surely when we come to a question of that kind, and when the change in the money expressions is what we like to understand, we should speak of changes in the purchasing power of money. It is very largely a question of expression, and I do insist that the corrections and qualifications made to-night are of the utmost importance, and I am glad to recognise that so many authorities to-night have supported this view of the matter. Mr. Bourne next made the criticism that incomes are not a good thing to compare with prices, because it may happen that a man is no better off with the same income as before, and lower prices than before; and he mentioned instances of people using their incomes not in an advantageous manner. But surely there is a great difference between saying a man is rich, and saying he does not deal with his riches properly. The latter is more a question for moralists, and not so much for statisticians; while of course here it is with the statistical problem we are dealing. Referring to what Mr. Foxwell said, I shall only mention one point in addition to returning my thanks for what he has so kindly said in general approval of the paper. He said it was a very important matter that money should continue of uniform value over long periods. One difficulty however I would point out is, that although it might be conceivable that you could have a money that was uniform in its purchasing power over commodities, or the average of staple commodities, and continue so from generation to generation, yet if the community is advancing, you are immediately landed in the other difficulty, that the incomes grow to a tremendous extent; in other words, you cannot have money uniform both in relation to prices of commodities and to incomes. Even if you were going to invent a money theoretically perfect, it might be more convenient to take a money that varied in regard to commodities than to take a money that did not so vary, but which might become very cumbersome owing to the continual growth of money expressions and the mass of metal requiring to be handled. I am very glad indeed that Professor Marshall, whom I must also specially thank for his expressions of agreement, mentioned the point about the rise of wages in India, and I hope, if he has data before him, that some time or other they will be published in some form; because although I defer to the great authorities who assert that there has been practically no rise of wages in India during the last fifteen years, I am perfectly satisfied in my own mind that there is some rise though perhaps not a great one on the average, and that this would appear if we could get at the data. In the Report by the Manchester Chamber of Commerce just issued, on the question why the Bombay spinning mills are cutting out Lancashire, I find it stated that the wages in the cotton spinning mills of Bombay have risen lately from 25 to 40 per cent. When one sees a statement of that kind, one becomes curious to know how far you can have such an increase in a particular trade without some other wages outside being dragged up with it. I think there is no great probability of any such rise of incomes in India as would correspond on the average to the advantage which people in this country have gained by the fall of prices, while their incomes have remained stationary, but there has probably been a rise of some kind. Last of all I should like to notice what Mr. Sauerbeck has said in agreement with me with regard to the future course of prices. Of course what I had in view was not the immediate course of prices. It is quite certain that there is a rise now from the state of prices two years ago, but what we are considering at present is what the state of prices is likely to be over comparatively long periods, and I think it is very important that Mr. Sauerbeck should join in the concluson that it is extremely probable we are not yet at the end of that fall of prices which commenced ten or fifteen years ago.

MISCELLANEA.

CONTENTS :

	PAGE
I.—Report of a Committee with reference to the Census of 1891	816
II.—Index Numbers as illustrating the Progressive Exports of British Produce and Manufactures. By STEPHEN BOURNE, Esq.	819
III.—The Wages of the Working Classes in Berlin	823
IV.—Awards for Meritorious Discoveries and Inventions	826
V.—Notes on Economical and Statistical Works	827
VI.—Quarterly List of Additions to the Library	836

I.—*Report of a Committee with reference to the Census of* 1891.

IMPERIAL CENSUS *of* 1891, COMMITTEE.

Consisting of the undermentioned—

Mr. Charles Booth.	Mr. J. S. Jeans.
,, Hyde Clarke.	Dr. G. B. Longstaff.
,, Rowland Hamilton.	Dr. F. J. Mouat, LL.D.
,, Frederick Hendriks.	Mr. F. G. P. Neison.
,, N. A. Humphreys.	,, E. G. Ravenstein, and

Sir Rawson W. Rawson, K.C.M.G., C.B., Chairman.

THE Committee appointed by the Council of the Royal Statistical Society with reference to the Census of 1891, submit the following report:—

The Committee desire to repeat, but with increased urgency, the recommendation made by former committees, that a census of the United Kingdom should be taken more frequently—once in every five years, instead of at intervals of ten years.

2. The information to be thus acquired with regard to the growth, movement, and condition of the population, becomes every year more needful for manifold practical purposes connected with the general and local government of the country. It is not less required as a basis for those inquiries into the physical, sanitary, and social condition of the people, which at the present time are generally recognised to be essential to their well-being.

3. This information is not supplied by the annual estimates calculated by the Registrar-General from the records of births and deaths, &c.; because, although for the last three censuses the difference between the calculated and the enumerated aggregates of the population of England and Wales amounted to less than 1 per cent., those estimates furnish no guide to the changes in

different parts of the country, and especially to the changes, in opposite directions, among the dwellers in town and country, all of which it is important to ascertain and bring to notice at short intervals.

4. It is a fact that while the calculated estimates of the population of certain towns between 1871 and 1881 were so accurate as to come within one per cent. of the truth, in others the estimates exceeded the truth by as much as 11 per cent., while in one they fell short of it by as much as 18 per cent. In some the conditions were so changed as to render any comparison impracticable. The error in all London was 3 per cent., but in the sanitary districts of Kensington and Battersea it was 26 and 39 per cent. respectively. Indeed, so strongly has the Registrar-General become convinced of this fact, as the distance from the last census increases, that he has ceased to publish estimates of the population in the case of all the "smaller towns," fifty in number, and calls attention to the untrustworthy character of the estimates relating to several of the twenty-eight principal towns.

5. The Committee would observe that the United Kingdom is in this respect behind many countries of Europe and America, and even some of its own colonies. Since 1866 a census of the whole German empire has been taken quinquennially. In Sweden a quinquennial census has been taken since 1805; in France since 1835; and in Finland since 1875. In the United States the Federal Government has only taken a decennial census, but fifteen of the States and territories took an intermediate census in 1885. Among our own colonies a quinquennial census is taken in New Zealand, Queensland, Manitoba, and in portions of the North-West Territory of Canada.

6. Although there may have been special reasons in some of those countries for numbering the population every five years, they are not more important than those which have created such a general agreement and increasing demand for a similar measure in this country; while the actual expenditure in partial inquiries by central and local authorities, and the manifold inconveniences and probable losses incurred through the want of accurate and recent information, outweigh by far the increase of expenditure which an intermediate census would entail.

7. This expenditure, it must be observed, would not necessarily be double that of a decennial census, because some economy might be effected in the preparations and arrangements for taking and publishing the results, if the census were made at shorter intervals than ten years, Under the present system the acquired skill and experience of the officers employed—both local and central—are in a great measure faded and lost. A fresh organisation has to be created on each occasion, and the employment of unskilled and untrained hands is productive of great waste and loss of time and money.

8. There are two measures which might facilitate and improve the taking of the census at any interval.

The first is the passing of the Census Act at an earlier date than hitherto. It is considered that two years, instead of one, or less

Google

than one, as on the last occasion, should be secured for making the necessary preparations. The Committee therefore recommend that the Act for the Census of 1891 should be passed as early as may be practicable in the Session of 1889.

In connection with this point, it is further recommended that a permanent Act should be passed for a quinquennial census, to be taken in such manner and with such particulars as may be decided by parliament, leaving the precise day on each occasion to be fixed by an Order of Her Majesty in Council.

9. The second measure is the appointment of a separate Census Branch in the General Register Office for England and Wales, whose whole attention may be given to the business of the census of that part of the United Kingdom, without the periodical interruption and dislocation of the business of registration which has hitherto been productive of much inconvenience.

The officers of such a branch would find full employment in making and accelerating the preparations for each quinquennial census of England and Wales, in organising the machinery for taking it, in training and superintending the persons (generally unskilled and often ill-qualified), who are employed in abstracting and tabulating the returns, and in expediting the printing and publishing of the results.

From an office so constituted, having in charge the records of each census, and the key to their contents, the Legislature and the Executive Government would be able from time to time to procure information regarding the population, which has hitherto been inaccessible.

Such an office might also undertake a work which is much required, viz., that of making available to the public, in a convenient shape, and with as much uniformity as may be practicable, the principal results of the several censuses of the United Kingdom, India, and the Colonies.

A further duty of such an office would be to study the means of promoting uniformity in the census of the different parts of the Empire, and, among other things, of revising the description and classification of occupations furnished by the census, with the view of meeting the requirements and facilitating the inquiries of the industrial departments of the Board of Trade and Home Office, of the great trade organisations, and of private individuals engaged in the investigation of industrial and social problems.

10. The Committee do not deem it expedient, in this their first report, to enter upon questions of detail with regard to the schedule of particulars to be inserted in the Act, or to the extent or shape of the information to be tabulated and published with the reports on the census, which require careful consideration, and about which there may be some difference of opinion. No such difference exists with regard to the several measures recommended in this report, and the Committee earnestly recommend their adoption.

RAWSON W. RAWSON,

9th November, 1888. *Chairman.*

II.—*Index Numbers as illustrating the Progressive Exports of British Produce and Manufactures.* By STEPHEN BOURNE, ESQ.

[Read before Section F of the British Association at Bath in September, 1888, and ordered by the General Committee to be printed *in extenso* among the Reports.]

A PAPER read at the Aberdeen Meeting of 1885 endeavoured to show the "Use of Index Numbers in the Investigation of Trade Statistics," and set forth in several forms the comparisons which might thus be made between the exports of 1883 and previous years. The publications of the Board of Trade since that date enable similar calculations to be made for the four later years, and it is thought that these figures may be interesting as an addendum to those then produced. The materials then used were wholly drawn from the official tables and did not extend to the imports, which are generally susceptible of being so treated; nor does the present inquiry travel beyond the range of that paper.

The method then adopted was to fix upon 1,000, 100, 10, or 1, as the index for 240,000,000*l.*, the whole value of the British exports of 1883, and to split this up into so many numbers as there were specified articles the values of which made up this sum of 240,000,000*l.* Thus cotton yarn, having been exported to the value of 13,500,000*l.*, had for its index number 56; and in like manner every other article comprised in the total of 1,000. Such a set of figures if prepared for other years—that is, taking 1,000 to represent 240 millions of money—would show at a glance the progress of the export trade for any number of years either backwards or forwards for which the requisite data were available.

But value alone is no evidence of the extent of our trade, since prices differ greatly in one year from others; and hence the volume of such exports can only be brought into the requisite proportion to the whole of its own or other years, by reducing the weights and measurements to a common standard or properly altering the index number.

This is done by considering the price of each article in 1883 to be the unit 1·0, and that for other years to be more or less than this by the proportion in which it differs. Thus cotton yarn in that year was 12·25*d.* per pound, that for 1887 10·88*d.*, and reckoning the former to be 1·0, the latter is between 0·89 and 0·90. Now if we wish to convert the value of the 1887 export, viz., 11,400,000*l.*, the index number for which is 47, into the equivalent in volume which at the price of 1883 the value of 1887 would have procured, we divide 47 by 0·89 to find 53 as its index to compare with that of the former year.

Pursuing a similar course for all the articles of which the quantities and the prices are specified in the accounts, and assuming that those for which these particulars are not attainable should be in the same ratio as those which are so distinguished, we get an index number for the whole which represents the difference in the extent of our trade as regards quantity. With these materials it can also be shown at a glance wherein the several articles and the several years correspond to or differ from each other.

The first of the following tables sets forth in detail the method of comparison between 1883 and 1887. The second condenses the figures of the five years into the index numbers for classes of goods; and the corresponding indices calculated at the prices of 1887.

A.—*British Goods Exported in* 1887 *compared with those of* 1883.

Articles.		1883.			1887.				
		Average Price.	Value of Exports.		Average Price.	Value of Exports.	Index Numbers.		
			In Million £'s.	Index Number.			Value.	Price.	Value
						£			
Alkali	cwt.	6·12*s.*	2·12	9	5·66*s.*	1·74	7	0·92	8
Animals, horses	each	55·62*l.*	0·41	2	57·85*l.*	0·55	2	1·04	2
Arms, fire	,,	27·40*s.*	0·36	1	34·75*s.*	0·22	1	1·27	1
Gunpowder	lb.	5·83*d.*	0·38	2	6·46*d.*	0·26	1	1·11	1
Bags	doz.	5·16*s.*	1·14	5	4·07*s.*	0·66	3	0·79	4
Beer	brl.	79·82*s.*	1·62	8	76·14*s.*	1·68	7	0·96	7
Books	cwt.	9·55*l.*	1·17	5	8·81*l.*	1·18	5	0·92	6
Butter	,,	139·58*s.*	0·21	1	112·81*s.*	0·16	1	0·81	1
Candles	dz. lbs.	6·72*s.*	0·15	1	4·66*s.*	0·18	1	0·70	1
Cement	cwt.	2·31*s.*	0·93	4	1·94*s.*	0·98	4	0·84	5
Cheese	,,	84·15*s.*	0·06	—	79·26*s.*	0·06	—	0·94	1
Coals	ton	9·35*s.*	10·65	44	8·32*s.*	10·17	42	0·90	48
Cordage..................	cwt.	51·05*s.*	0·44	2	45·67*s.*	0·37	2	0·90	2
Cotton yarn	lb.	12·25*d.*	13·51	56	10·88*d.*	11·38	47	0·89	53
,, manufactured—									
plain	yard	2·61*d.*	34·15	142	2·27*d.*	32·81	137	0·87	158
printed....	,,	3·62*d.*	20·83	87	3·17*d.*	18·93	79	0·88	90
mixed	,,	5·81*d.*	0·55	2	—	—	—	—	—
,, stockings	doz.	3·28*s.*	0·54	2	—	0·44	2	—	2
,, thread	lb.	3·27*s.*	2·36	10	2·92*s.*	2·98	12	0·89	15
Fish, herrings	brl.	29·73*s.*	1·43	6	20·62*s.*	1·05	5	0·70	7
Glass, plate	sq. ft.	1·42*s.*	0·26	1	1·12*s.*	0·26	1	0·80	1
,, flint	cwt.	44·94*s.*	0·34	1	48·64*s.*	0·24	1	1·08	1
,, common........	,,	9·27*s.*	0·36	2	9·45*s.*	0·39	2	1·02	2
Hats	doz.	21·50*s.*	1·14	5	19·08*s.*	1·14	5	0·90	6
Leather	cwt.	9·34*l.*	1·64	7	8·79*l.*	1·34	6	0·[illegible]4	
,, boots	dz. prs.	60·10*s.*	1·54	6	57·94*s.*	1·75	7	0·96	
Jute yarn	lb.	3·05*d.*	0·27	1	2·32*d.*	0·23	1	0·76	
,, manufactures..	yard	2·64*d.*	2·50	10	2·02*d.*	2·06	8	0·78	
Linen yarn	lb.	14·36*d.*	1·06	4	13·77*d.*	0·94	4	0·96	
,, manufactures—									
white	yard	6·95*d.*	4·41	18	6·07*d.*	3·86	16	0·87	
printed	,,	7·80*d.*	0·21	1	6·12*d.*	0·21	1	0·78	
sail cloth...	,,	11·73*d.*	0·17	1	11·01*d.*	0·14	1	0·94	
,, thread...........	lb.	2·61*s.*	0·29	1	2·48*s.*	0·35	1	0·95	
Iron, old	ton	3·47*l.*	0·34	1	2·86*l.*	0·83	3	0·82	
,, pig	,,	52·14*s.*	4·08	17	47·26*s.*	2·74	11	0·91	
,, bar	,,	7·06*l.*	2·03	8	5·50*l.*	1·45	6	0·78	
,, railroad	,,	6·19*l.*	6·01	25	4·56*s.*	4·62	19	0·73	
,, wire	,,	14·80*l.*	0·93	4	13·58*l.*	0·63	3	0·90	
,, sheet	,,	10·12*l.*	1·48	6	9·06*l.*	3·31	14	0·90	
,, galvanised	,,	15·18*l.*	1·75	7	11·75*l.*			0·77	
,, hoop	,,	7·77*l.*	0·67	3	6·06*l.*			0·78	
,, tinned	,,	17·47*l.*	4·71	20	13·56*l.*	4·79	20	0·77	
,, cast	,,	12·97*l.*	4·62	19	11·16*l.*	4·12	17	0·85	
,, steel, wrought	,,	19·10*l.*	1·40	6	—	2·09	9	—	
,, ,, manufactures....	,,	42·70*l.*	0·58	2	29·93*l.*	0·41	2	0·70	

A.—*Contd. British Goods Exported in* 1887 *compared with those of* 1883.

Articles.		1883.			1887.				
		Average Price.	Value of Exports.		Average Price.	Value of Exports.	Index Numbers.		
			In Million £'s.	Index Number.			Value.	Price.	Volume.
						£			
Copper ingots	cwt.	3·38*l.*	1·14	5	2·26*l.*	0·97	4	0·67	6
,, yellow metal	,,	2·99*l.*	1·18	5	2·08*l.*	0·70	3	0·70	4
,, other kinds.	,,	3·87*l.*	1·24	5	2·58*l.*	0·99	5	0·66	7
Brass	,,	4·47*l.*	0·43	2	3·75*l.*	0·34	1	0·84	1
Lead	ton	14·07*l.*	0·55	2	13·75*l.*	0·61	2	0·98	2
Tin	cwt.	4·88*l.*	0·52	2	5·48*l.*	0·54	2	1·12	2
Zinc	,,	13·89*s.*	0·10	—	13·91*s.*	0·15	1	1·00	1
Oil seed	gall.	1·85*s.*	1·86	8	1·67*s.*	1·57	7	0·90	8
Paper	cwt.	2·15*l.*	1·28	5	1·74*l.*	1·48	6	0·81	8
Salt	ton	12·84*s.*	0·65	3	12·82*s.*	0·52	2	1·00	2
Silk, brocaded stuffs	yard	3·26*s.*	1·25	5	4·15*s.*	1·37	6	1·27	8
Soap	cwt.	22·96*s.*	0·45	2	19·98*s.*	0·45	2	0·87	2
Spirits	gall.	5·93*s.*	0·81	3	6·70*s.*	1·04	4	1·13	4
Sugar	cwt.	21·40*s.*	1·24	5	13·19*s.*	0·47	2	0·62	3
Wool	lb.	12·71*d.*	1·03	4	11·25*d.*	0·92	4	0·88	5
,, yarn	,,	23·41*d.*	3·27	14	23·73*d.*	3·97	17	1·01	17
,, cloth	yard	38·30*d.*	7·35	31	40·04*d.*	9·85	41	1·04	40
,, flannels	,,	14·82*d.*	0·84	3	12·72*d.*	0·96	4	0·89	5
,, stuffs	,,	9·94*d.*	7·69	32	8·87*d.*	6·95	29	0·83	35
,, carpets	,,	28·24*d.*	1·26	5	24·26*d.*	1·31	5	0·86	6
Total specified articles		—	170·14	706	—	158·86	662	—	775
Total unenumerated articles		—	69·66	294	—	62·55	260	—	287
			239·80	1,000	—	221·41	922	—	1,062

B.—*Exports of British Produce and Manufactures for the Five Years ending with* 1887, *in Index Numbers on the Basis of* 1883, *viz.*, 1,000 *representing* 240,000,000*l.*, *with those Numbers as they would have been at the Prices of* 1883 (*the Black Figures being at* 1883 *Prices*).

	1883.	1884.		1885.		1886.		1887.	
Cottons	299	285	**294**	262	**283**	271	**304**	278	**318**
Linen and jute	36	36	**39**	31	**35**	32	**37**	32	**36**
Woollens	89	97	**98**	95	**98**	98	**102**	100	**109**
Chief textiles	424	418	**431**	388	**416**	401	**443**	410	**463**
Coals	44	45	**46**	44	**46**	41	**46**	43	**48**
Iron	118	102	**112**	90	**107**	91	**115**	104	**135**
Other metals	21	20	**22**	19	**23**	17	**22**	18	**23**
Chief minerals	183	167	**180**	153	**176**	149	**183**	165	**206**
Other specified	99	98	**100**	102	**108**	98	**108**	87	**106**
All other goods	294	288	**299**	245	**267**	237	**268**	260	**287**
Total goods	1,000	971	**1,010**	888	**967**	885	**1,002**	922	**1,062**

	Actual Values.		At 1883 Prices.	
	Index Number	£	Index Number	£
1883	1,000	= 239,799,473	1,000	240,000,000
'84	971	= 233,025,242	1,010	242,500,000
'85	888	= 213,044,500	967	232,000,000
'86	885	= 212,432,754	1,002	240,500,000
'87	922	= 221,414,186	1,062	253,000,000
Average	933	= 223,943,231	1,008	242,000,000

Although the object of this paper is rather to show the plan adopted and to add to the details of the former paper those relating to subsequent years, it would lack the interest to which the subject, if not the method is entitled, were there to be no allusion to the results at which we are thus enabled to arrive. Comparing then the figures of the year last ended with those of 1883, which has been adopted as a standard, we find that, starting with 1,000 as the index number to represent the total exports of the former year, 922 will be that for 1887, because the export of that year fell short of those in 1883 by 7·8 per cent.; but that having regard to the quantities of the several articles exported during last year and the higher prices which prevailed in 1883, we must make additions to most of them, which will bring the index up to 1,062, and therefore, that instead of the volume of trade having diminished in the proportion which the value taken alone would indicate, it has increased by 6·2 per cent. beyond that of 1883. In fact, that had the goods we thus sold in 1887 been parted with in 1883 they would have realised 253,000,000*l.* instead of but 221,000,000*l.*; in other words, that our trade in this particular branch has been larger by $\frac{42,000,000l.}{221}$, or 19 per cent., more than it appears to be, if we take value alone as our guide.

Treating the intermediate years in the same way, 1886 is increased by $\frac{28}{212}$, or 13·2 per cent.; 1885, $\frac{19}{213}$, or 9 per cent.; and 1884 $\frac{9·5}{233}$, or 4·1 per cent., the actual index numbers for the values from 1883 being in the series of

1,000 : 971 : 888 : 885 : 922;

those for volume:

1,000 : 1,010 : 967 : 1,002 : 1,062;

and carrying the comparison further back it was shown in the Aberdeen paper that, whilst the value series for the years 1883, 1879, 1875, 1873, and 1865 were 1,000 : 798 : 931 : 1,063 : 695, those for volume were 1,000 : 798 : 739 : 727 : 460; thus giving an accurate gauge of the conditions as to total volume as well as to total value for the four years since 1883 and four selected ones between that year and 1865. The same comparison may be made at sight with any single article either in relation to itself for previous years or as to its relative importance to others in one or many years.

Looking down the list of articles enumerated in the published accounts, it may be seen how much of our manufacturing power expended upon the production of goods for export is so spent upon each one, and wherein the variations in the volume as contrasted with the value have consisted. Grouping together all the textiles and all the metals and throwing all the others into a third, we learn that the value of textiles is represented by the index 410, the volume by 463, a difference of 12·4 per cent.; that of metals and minerals, including of course coal, the indices are 165 and 206, a difference of 23·1 per cent., whilst the whole stands at 922 and 1,062, or 10·85 per cent., thus showing the relative proportions of the two most important branches of our national industries, and the degrees in which they have varied in the one year from the other. It must be remembered always, however, that a vast variety of articles into which the materials are converted when finished, as, for instance, apparel from cotton and hardware from iron, are included in the unenumerated because we have no facts as to the alterations either of quantity or price.

Another branch of the inquiry, even as regards the export trade, would require similar figures and calculations for the imports of the raw materials in which we work. These are widely different in the case of the two principal branches, for almost all of those enumerated with textiles are of foreign production, whilst those employed in the metal industries are chiefly from native sources. To select for illustration the one class of cotton goods, of which the chief constituent is of foreign growth. Cottons altogether have an index number of 278 out of 922 for value, and one of 318 out of 1,062 for volume. The imports of cotton wool (after deducting the quantity sent away again in its original condition) are indicated by 143 for value and 166 for volume, which are very nearly one-half of the whole export figures. The index for prices is almost exactly the same, namely, 0·86 or 0·87, showing that there must have been a fall in the labour or other elements of the cost of production in the same ratio as in that of the raw material.

These particulars are not singled out as proofs of the progress the country has been making—for that would require a much more detailed examination—but as instances in which the method of reduction into index numbers facilitates inquiry and exemplifies its results. For whilst as regards each individual article or material its own figures furnish the best means of comparison, it is only, as is well known to all inquirers, by getting some common basis that we can effect the necessary additions, deductions, or combinations without which it is not possible that the whole should be shown or general conclusions established.

III.—*The Wages of the Working Classes in Berlin.*

The Berlin Statistical Society has recently issued a work entitled *Ermittelungen ueber die Lohn-Verhältnisse in Berlin*, in the introduction to which reference is made to the difficulties which beset the statistician desirous of collecting returns showing the income of any population. This is especially the case in Prussia, where it is not obligatory on the individual taxed to make any declaration of income, the authorities having at their disposal other means of arriving at the desired information. The difficulty is still greater when the wages of the working classes are concerned, for while the income of a clerk or government official can easily be ascertained on application to the firm or department in which he is employed, the wages of a working man, especially if he be engaged upon piece work, are often unknown to his employer. The Berlin Statistical Society has endeavoured to overcome the difficulty on the one hand by utilising to a certain extent the detailed information as to wages furnished by the various trade associations, called "Berufsgenossenschaften," which were called into existence for purposes of the Accident Insurance Act passed in July, 1884, and on the other hand, and to a far greater extent, by a system of *enquête*, by sending forms containing a multiplicity of questions to various guilds, companies, and societies. The questions refer to the wages, weekly, daily, and hourly, paid in the different trades, piece work being distinguished from time work, male hands from female, the various grades being also distinguished, beginning with the master hands and ending with the lowest, or labouring hands. Since 1885 these forms have also been sent to a great number of the manufacturing industries, as some confusion was found to arise from the conflicting opinions given by the members of the guilds, &c.

General wage statistics were not published in Berlin prior to 1880, up to which date information referring to the various building trades only was available. Since 1880 general wages statistics have appeared annually, dealing in each case with a certain month:—July of 1881, May of 1882, July of 1883, and May of each succeeding year, this month being considered as one during which trades generally are in full swing.

The following figures show the number of working men and women who were in Berlin according to the census in 1885:—

	Males.	Females.	Total.
Assistants	35,933	4,805	40,738
Journeymen	90,149	—	90,149
Apprentices	25,436	2,807	28,243
Labourers	17,990	27,870	45,860
Total engaged in various trades	169,508	35,482	204,990
Factory hands, not further defined	2,152	825	2,977
Railway labourers	2,039	—	2,039
Workmen and women not otherwise described	48,516	23,511	72,027
Total	222,215	59,818	282,033

These numbers have no doubt considerably increased since the census of 1885. There were in the same year 132,274 distinct trades. The number of tradesmen with more than 10 assistants was 3,097, and of tradesmen without any assistants 102,296. Statistics were compiled from returns made by 394 trades and 96 guilds and companies.

The following table shows the average weekly wages paid by the trades comprised in the principal manufacturing industries for the period extending over the three years 1885-87, and grouped according to the system used in taking the census.

Industries.	Master Workmen.		Journeymen and Assistants.		Apprentices.		Labourers.								Piece Work Higher (+) or Lower (−) than Time Work.			Working Men's Wages Higher than Working Women's Wages.	
							Men.		Youths.		Women.		Girls.		Journeymen.	Male Labourers.	Female Labourers.		
	Time Work.	Piece Work.	Time Work.	Piece Work.	Time Work.	Piece Work.	Time Work.	Piece Work.	Time Work.	Piece Work.	Time Work.	Piece Work.	Time Work.	Piece Work				Time Work.	Piece Work.
	Marks	Marks	Marks	Marks	Marks	Marks	Marks	Marks	Marks	Marks	Marks	Marks	Marks	Mrks.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
1. Stone and earth..	38·40	....	25·45	28·00	7·55	....	17·05	....	....	....	10·20	...	....	....	+ 10·0	....	....	67	....
2. Metals	37·45	34·65	21·50	23·65	5·95	9·30	15·20	20·75	7·70	10·20	10·95	11·85	6·55	....	+ 10·0	+ 36·5	+ 8·3	39	75
3. Machinery	39·00	....	21·95	25·55	6·05	11·85	16·65	19·15	8·15	....	11·00	11·70	7·60	....	+ 16·4	+ 15·0	+ 6·4	51	64
4. Chemicals	....	....	....	....	....	....	13·25	....	....	....	....	....	....	....	....	....	....	....	....
5. Combustibles (fuel, light, &c.)	30·95	....	23·25	30·85	....	....	20·25 17·60	25·20	....	....	11·30	....	....	....	+ 32·7	+ 24·4	....	79 56	....
6. Textile industries	34·40	....	17·60	16·20	6·75	....	15·85	19·10	8·00	8·85	9·80	11·60	6·50	7·35	− 8·0	+ 20·5	+ 18·4	62	65
7. Paper and leather	32·45	....	21·30	24·10	6·55	....	17·80	20·85	7·90	9·70	10·55	12·65	6·50	....	+ 13·1	+ 17·1	+ 19·9	69	65
8. Woodwork of every description	33·00	....	20·30	21·70	5·75	8·70	17·55	18·75	8·55	....	10·75	10·60	....	7·15	+ 6·9	+ 6·8	− 1·4	63	76
9. Foods, every kind	35·75	....	22·25	16·85	6·05	....	17·10	15·80	7·95	....	9·85	11·60	7·25	....	−24·3	− 7·6	+ 17·8	74	36
10. Making and cleaning of clothing........	32·55	....	18·60	19·65	5·70	....	16·90	....	....	....	11·25	12·20	5·80	7·00	+ 5·6	....	+ 8·4	50	....
11. Building trades	34·55	....	24·25	36·15	10·40	....	15·50	....	....	....	....	....	....	....	+ 49·1	....	....	....	....
12. Polygraphical establishments	40·10	....	26·25	28·25	5·75	....	17·45	....	8·20	....	11·50	13·25	7·15	....	+ 7·6	....	+ 15·2	52	....

This table is followed by a statement showing the average wages of journeymen and assistants in each of the distinct trades comprised in the above twelve categories.

The average weekly wages of male labourers compared with female labourers may be seen from the following:—

	May, 1882.	July, 1883.	February, 1884.	May, 1885.	May, 1886.	May, 1887.
	Marks	Marks	Marks	Marks	Marks	Marks
Male working hands	16·30	14·90	15·20	16·05	16·15	16·30
Female ,,	8·75	8·85	9·25	10·25	10·40	10·20

Women have been paid at a rate lower than men in the following proportions:—

May, 1882.	July, 1883.	February, 1884.	May, 1885.	May, 1886.	May, 1887.
Per cnt. 46·3	Per cnt. 40·6	Per cnt. 39·1	Per cnt. 36·1	Per cnt. 35·0	Per cnt. 37·4

It is stated that in 1887 wages were on the whole lower than in 1886, except in the building trades, in which a rise has occurred, attributable to recent strikes. Among the miscellaneous interesting details published in the volume under review are charts showing the distribution of the working population in Berlin, and a copy of the wages return of one of the largest printing works in that city. The charts are coloured, one being devoted to the male and the other to the female artisans.

IV.—*Awards for Meritorious Discoveries and Inventions.*

THE Council have directed the following notice to be inserted in the *Journal*:—

The Committee on Science and the Arts of the Franklin Institute, of the State of Pennsylvania, U.S.A., have requested that it may be made known to the members of the Royal Statistical Society, that they are empowered to award, or to recommend the award of, certain medals for meritorious discoveries and inventions, which tend to the progress of the arts and manufactures.

These awards are:—

1. The Elliott Cresson Medal (gold).
2. The John Scott Legacy Premium and Medal. ($20 and a medal of copper.)

Upon request therefore, from interested parties, made to the Secretary of the Franklin Institute, full information will be sent respecting the manner of making application for the investigation of inventions and discoveries; furthermore, the Committee on

Science and the Arts will receive and give respectful consideration to reports upon discoveries and inventions, which may be sent to it with the view of receiving one or the other of the awards hereinnamed, and full directions as to the manner and form in which such communications should properly be made, will be sent on application.

V.—*Notes on Economical and Statistical Works.*

Final Report of the Royal Commission appointed to inquire into the Recent Changes in the Relative Values of the Precious Metals. London: Eyre and Spottiswoode, 1888.

The final report of the Gold and Silver Commission consists of three parts. In the first of these, which is signed by all the commissioners, "the nature of the problems involved and their bearing on one another," together with the "arguments and opinions expressed on either side," are "set out at" "length;" and this statement is followed by the unanimous conclusions of the commissioners as to the causes of the changes referred to them for inquiry. The second part contains the conclusions and recommendations of six of their number with reference to the effects of those changes and the advantages and drawbacks of the remedies suggested; and the third and concluding part similarly contains the conclusions and recommendations of the remaining six. The former of these two portions bears the signatures of Lord Herschell, Mr. Fremantle, Sir John Lubbock, Sir Thomas Farrer, Mr. Birch, and Mr. Courtney, and records their opinion that the "wiser course is to abstain from recommending any fundamental change." The latter, on the other hand, which is signed by Sir Louis Mallet, Mr. Balfour, Mr. Chaplin, Mr. Barbour, Sir William Houldsworth, and Mr. Montagu, expressly advises the "re-establishment" of a "bimetallic system."

The first and non-controversial part of the report begins with an allusion to the "extreme complexity" of the subject, and the "very imperfect" nature of the "statistical information" upon it. The figures, however, of Dr. Soetbeer appear to be "more deserving of general acceptance" than any others with which the commissioners have met; and "so much impressed" have they been "by the value of his work" that they have "appended a translation" of it to their own report. From the outset they distinguish the changes referred to them for inquiry into (1) "extensive *fluctuations* in the relative values of gold and silver," and (2) "a considerable fall in the gold price of silver;" and this distinction is observed throughout the several sections of the report. About the occurrence of these changes there can be no question; but more than one cause has been suggested for their origin, more than one estimate has been formed of the nature and extent of their effects, more than one opinion has been entertained of the possibility, the efficacy and the advantages and drawbacks of the remedies suggested for their arrest or mitigation. From p. 2 to p. 55 of the report the commissioners are occupied with an exhaustive summary of this variety of opinion. The changes have, they remark, been ascribed by some to *causes* specially affecting silver, whether these are traced to an increase of supply, due partly to augmented production from the mines, and partly perhaps—although this, the commissioners observe, must have had a "very temporary" effect—to the sale of demonetised silver by Germany; or whether, again, they are traced to a decrease of demand, both for coinage purposes in Europe and for remittance to India; or whether, thirdly and lastly, they are attributed to the "destruction of the bimetallic ratio" in the States of the "Latin Union." They have also—and this has been more particularly the case of recent years—been attributed to causes specially affecting gold—to a "diminished supply from the mines" "coupled with" an "increased demand" for monetary purposes, for industrial purposes—although, indeed, the commissioners observe, "very little evidence has been adduced in support" of this view—and for purposes of hoarding, both by individuals and governments. On the other hand, as in the case of silver it has been argued that, owing to the Bland Act, to the fresh demands of China, to the "temporary" nature of the effects of the Indian Council Bills, there has really been no decrease in the "actual employment of silver," and the increased supply from the mines is "not sufficient to account for" the "fall of 25 or 30 per cent." which has taken place in its gold price, so in the case of gold it is contended that the "effect" of "the diminution" of supply has been "inappreciable" "owing" "to the magnitude of the stock already in existence"; and that there has been no evidence of a "scarcity" of the metal in the direction which might be expected—in the amount and fluctuations of the rate of discount, and the state of the reserves—while positive economies have been effected in its use. These arguments have in their turn been controverted, and additional evidence of an appreciation of gold has been sought in the fact of a fall in the gold prices of commodities, combined with the absence of a rise in silver prices. The testimony of index numbers—among which the commissioners mention those of the *Economist*, of Mr. Sauerbeck, of Mr. Inglis Palgrave, of Dr. Soetbeer, and of Mr. Giffen—together with that said to be afforded by the "stationary" character of the income tax revenue since the year 1873, by the rise in the value of "gold securities," and by the fall of wages, or, where this has not been the case, the greater irregularity of employment, has been brought forward to prove the fall of gold prices; and, with regard to the absence of a rise of silver prices, the commissioners themselves remark that, despite of the difficulty of drawing "any useful or reliable conclusions" from the "imperfect statistics available," "it may" yet be "safely said that there is no evidence of a rise in prices in India." This line of argument to prove an appreciation of gold has in its turn been disputed; and it has been urged that the connection between the supply of gold and prices is "not direct but indirect," acting through the "elastic" medium of credit; and that the index numbers cited as evidence are not only in themselves defective, but also do not warrant the conclusions which have been based upon them. They are said to be defective because they do not include the prices of manufactured goods, of retail trade, or of services; and also because they are liable to the general failings of averages. They are said—although this, like the former argument, is disputed—to be inconclusive, because the fall in prices may be traced to other causes,—such as increased production, and improved transport and organisation of credit. The commissioners conclude this portion of the report by stating that a third explanation of the "recent changes" has been found by some in causes affecting both metals, whether due, it is variously contended, solely to circumstances of supply and demand, or more especially to the destruction of the bimetallic ratio.

Having thus stated the varying explanations given of the causes of the changes, the commissioners proceed, on p. 25, to summarise the different accounts supplied of their *effects*, following the distinction they established at the outset. Among the effects alleged to be produced on the United Kingdom by the fluctuations in the relative values of gold and silver, the first place has been given by some to the difficulties of exchange with silver-using countries, which, it is variously contended, may or may not be exaggerated, and may or may not be reduced to a minimum in practice through the agency of banks, through the setting off of an inward against an outward transaction, or through the conclusion of "simultaneous bargains." The second effect is said to be a "diversion of trade from gold-using to silver-using countries," and this is illustrated—although indeed another explanation of the phenomenon has been suggested—by the increase in the Indian "manufacture and export of cottons." A third and last effect is found in the alleged "discouragement to investment of capital in silver-using countries." Turning next to the effects of the fall in the gold price of silver, they may be described as twofold. In the first place it is alleged to have occasioned—whether directly owing to the necessary adjustment in prices taking the line of least resistance and occasioning a fall of gold rather than a rise of silver prices, or indirectly through the increased work thrown upon gold—a fall in the gold prices of commodities; and this fall has been accompanied by disadvantages in the form of discouragement to enterprise—whether based on sentimental or on material considerations—and of benefit to idle creditors at the expense of active industrious debtors, although indeed, it is also affirmed and disputed, the fall has its compensating advantages in the shape of diminished speculation and benefit to consumers and wage-earners. Another effect of the fall in the gold price of silver is said to be the bestowal of a bounty on producers in silver-using countries, or perhaps, more correctly, the creation of a relatively greater disadvantage to producers in gold-using countries. They find, it is argued, that the gold prices of the goods they sell are less, but the gold prices of the items of their expenses of production have not fallen in proportion, while their rivals in silver-using countries get a less gold but the same silver price as before, and have not to bear the loss of any rise in the silver prices of their expenses of production. Lastly, the commissioners notice the special effects alleged to be produced on India. They summarise the arguments variously advanced about the troubles of the Government in the discharge of its gold obligations, in the uncertainty of its financial estimates, coupled with objections to increased, or, at least, to fluctuating taxation, and in the difficulty of obtaining capital for the development of the country; and they state the varying accounts given of the position of certain classes of the civil servants, and of the Indian people generally.

On p. 42 the commissioners proceed to a review of the *remedies* which have been suggested to them. The most prominent of these is, they remark, that "known as bimetallism;" and this has, in the opinion of its advocates, "two essential features:"—(1.) "An open mint ready to coin any quantity of either gold or silver which may be brought to it," and (2.) "the right on the part of a debtor to discharge his liabilities, at his option, in either of the two metals at a ratio fixed by law." Bimetallists contend, the commissioners observe, that it can be shown *à priori* that such a system will secure greater stability in the relative values of the precious metals, and that *à posteriori* facts prove that this has actually been its result. In answer to the first of these two lines of argument opponents advance the operation—in the absence of universal bimetallism—of Gresham's law, and the danger that a great increase—such as they contend would be only too probable—in the production of silver would have the effect of driving gold out of the circulation. In reply to the second line of argument they assert that the stability of the relative values of the metals during the first seventy years of this century was due to "accidental" coincidences, and not to the bimetallic law. and that, as a matter of actual fact, a small premium existed from time to time on one or other of the two metals. Bimetallists again maintain, the commissioners remark, that their system would reduce the difficulties of exchange and arrest the fall of prices; and to this their opponents retort that it would also—whatever the ratio adopted—endanger the financial supremacy of England, which, they contend, rests on her gold standard; that it would give rise to a feeling of uncertainty about further changes; that it would inflict injustice on creditors, and that it would cause inconvenience, as gold is the "natural metal for currency." If the existing market ratio were taken as the basis of the bimetallic arrangement, most of the evils alleged to be caused at present would, they contend, be perpetuated; and, on the other hand, if a return were made to the old ratio of 15½ to 1, they argue that the mints of the Bimetallic Union would be "flooded" with silver from the countries now holding "stocks of that metal;" the position of England as a creditor-country would be prejudicially affected; the rise in prices which would follow would injure wage-earners; the State by deliberate action would create an injustice in the attempt to correct another due to causes beyond its control, and the Indian producer would be robbed of the advantage he is now supposed to enjoy. The possibility, once more, of establishing and maintaining a bimetallic union is asserted by the one party and denied by the other; and bimetallists also lay stress on the dangers and difficulties of the *status quo*. The commissioners conclude this part of the report by mentioning the other remedies which have been brought under their notice. They have not "thought it necessary to give a prolonged consideration" either to the proposal of "an amalgam coin" or to Professor Marshall's suggestion of a paper currency "based upon linked bars." A third suggestion laid before them has been the maintenance and extension of the so-called "étalon boiteux," now in force in the "Latin Union," the United States, and Holland, which presents the second but not the first of the two "essential features" of a bimetallic system, and would be somewhat similar in its effects to the suggestion of the Italian Government in 1882, of an international arrangement guaranteeing a certain coinage of silver. Suggestions have also been made of the repeal of the duty on silver plate in this country, of the issue of 1*l.* notes—although this, the commissioners say, would exercise a "very transitory effect"— and of the adoption of a gold standard in India.

With p. 56, the commissioners pass from this analysis of conflicting argument and opinion to the statement of their unanimous conclusions about the *causes* of the recent changes. There has been a "large increase,"—amounting to some "100 per cent. in quantity," "during the last fifteen" to twenty years—in the annual production of silver; and this has been "coincident" with "a diminution of nearly 25 per cent." in that of gold. There also "appears to be ground for the allegation that there has been" during the same period "both increased use of gold and diminished use of silver for currency" purposes. The increase in the use of gold indeed "has been," it can scarcely be doubted, "considerable;" but "it is doubtful whether there has been on the whole any great diminution in the use of silver." Nor is it easy to determine how far these influences have been operative in bringing about the recent changes; for the effects of changes in supply and demand are less "marked" and "immediate" in the case of the precious metals than in that of other commodities. It is too to be noticed that prior to 1873 there were "vast changes" in the relative production of gold and silver which yet failed to produce any "disturbance" in their relative values corresponding to that which the subsequent period has witnessed; and that the "fluctuations" in the gold price of silver were then "gradual" in character, and "ranged within very narrow limits," while since 1873 they have been sudden and extensive. And so the "existence of some steadying influence in former periods which has now been removed" is suggested; and it is discovered in the bimetallic system of the Latin Union. "The true explanation of the phenomena" referred to the commissioners for inquiry, is, they declare, "to be found in a combination of causes, and cannot be attributed to any one cause alone. The action of the Latin Union in 1873 broke the link between silver and gold which had kept the price of the former, as measured by the latter, constant at about the legal ratio; and when this link was broken, the silver market was open to the influence of all the factors which go to affect the price of a commodity," and "which happen, since 1873, to have operated in the direction of a fall in the gold price of the metal."

At this point the agreement of the commissioners ceases, and Part II of the report begins. The commissioners by whom this section is signed are of opinion that of the evils alleged to arise from fluctuations in the relative values of the precious metals, that which consists in difficulties of exchange "is no doubt reduced to a minimum by the action of exchange banks and telegraphic transfers," and "statistics do not appear to afford evidence" of a consequent diminution in "trade between this country and India;" but "its reality" is not "open to question." The effect, again, of the fluctuations, in encouraging exclusive trade between silver-using countries is not, they think, "likely to be very considerable;" but they do seem to hinder, "difficult" though it be to "gauge" the extent of this influence, the investment of capital in those countries. Passing next to the consideration of the evils said to result from the altered relation of silver to gold, the commissioners declare that "there can be no question that the gold price of many, and probably of most, commodities has fallen during the last fifteen years." The evidence of index numbers, "although requiring to be used with caution," testifies "to a fall," and in some cases a "very heavy," fall, "in the majority of the commodities in common use;" but the fall "has been neither universal nor uniform," and the commissioners are of opinion that no "sufficient explanation" has been offered to them "of the phenomena which have manifested themselves, assuming them to be entirely due to appreciation of the standard." Nor are the "other causes which have been operating to produce a fall of price" "far to seek," for they may be found in such influences as improvements in production and transport, the elimination of middlemen and immunity from war. Economies have also been effected in the use of gold; and the "nexus" between the supply of gold and prices is less direct than is sometimes supposed. This indeed is "a question of extreme complexity and difficulty," and "it seems scarcely possible to arrive at any certain conclusion;" but the facts relating to the ordinary channels through which the supplies of gold may be supposed to operate on prices—such as the rate of discount—do not appear to afford any "marked indication" of a "serious scarcity" of that metal. On the whole the commissioners think that the "sounder view is that the greater part of the fall" in "the prices of commodities" "has resulted from causes touching the commodities rather than from an appreciation of the standard." The further question then arises "whether this is true of silver as well;" and the apparent absence of a rise in prices in silver-using countries to an extent corresponding to the fall in gold prices does not necessarily prove that, "as between gold and silver, it is gold which has appreciated, rather than silver which has depreciated." "It is quite possible" that a "concurrent fall" of silver and commodities, "as compared with gold," may have prevented a fall in silver prices which would otherwise have taken place. There has undoubtedly been "an increase in the annual supply" of silver and, "concurrently with this," a diminution in its use. Sentimental considerations have also in all probability unduly depressed its value; and, in estimating the stock already in existence liable to be affected by changes of supply, we must deduct the "subsidiary" coinages of Europe and America which form no part of the "stock in the open market." The amount remaining in Europe and America after this deduction is less than 100 million £; and consequently an increase of supply of 10 million £ a year might produce a marked effect on the value of the metal. So far as to the supply; but causes have also been at work checking the flow of silver to the East. The fall in the gold prices of commodities has made them as profitable objects of export as silver itself, and there has been an increase in the current indebtedness of India to England. It may be then the case that the "greater part of the fall in the gold value of silver" has, in a similar way to that in the gold value of commodities, "been due to causes affecting silver rather than to causes affecting gold." "So far," however, "as the fall in prices represents an appreciation of the standard," it is undoubtedly an "evil," and it must also be "admitted that the Indian producer is for a time in a somewhat more favourable position than his English competitor," although indeed the "term bounty" is in "no view properly applicable"—while the Indian purchaser of Lancashire goods can afford to pay no higher silver price, and consequently can only afford a lower gold price than before. But both in the one case and in the other, it is "only to a limited extent" that prices are affected by the fall in the gold price of silver or the appreciation of gold, and the commissioners remark in conclusion that they do not think that the "materials exist," or that the "time" has "arrived for the expression of a confident opinion" on the influence exerted by the currency on prices. With regard however to the injurious effects of the fall in the gold price of silver on the finances of the Indian Government, "there cannot," they declare, "be two opinions." They then proceed to discuss the remedies which have been suggested; and they affirm that bimetallism can only be considered on the understanding that it would be "part of an international arrangement to which the leading commercial nations of the world were parties," and that it would be based "on a ratio between silver and gold approximating to the present market ratio." They think that "in any conditions fairly to be contemplated in the future, so far as" they "can forecast them from the experience of the past, a stable ratio might be maintained if" "the United Kingdom, Germany, the United States, and the Latin Union" "were to accept and strictly adhere to bimetallism at the suggested ratio.' They are also of opinion that, as a consequence of such an arrangement, fluctuations "of exchange," "so far as they depend upon the varying relation of silver to gold," "would cease," and the difficulties of the Indian Government "would be at an end;" that the fall of prices, so far as it is "due to the appreciation of gold" or to "the fall in the gold price of silver," would be arrested, and that the danger of disturbance, with which the "vast superstructure of credit" resting on a gold basis is threatened by an appreciation of that metal, would be removed. But on the other hand most of the evil already caused, or alleged to be caused, would remain—although this indeed they "do not regard as a fatal objection;" there would at least be a risk of undermining the financial supremacy of England; specific contracts might be effected for payment in gold, and might create in consequence a premium on that metal, and "cause some strain upon the bimetallic ratio; or again some one of the contracting parties might secede from motives of interest or caprice," and some Government or bank might "seek to accumulate gold," although the apprehension of its entire disappearance from the circulation is, they admit, remote. "The change" proposed is, in short, "tremendous," and they "cannot but feel that to a great extent it would be a leap in the dark," and that it "could not be made safely, or without the risk of creating evils exceeding those which we at present experience." The adoption of the old ratio would, they add, intensify these evils, would be difficult to maintain, and might cause a "sharp and serious" rise in prices. In conclusion they recommend the consideration of the proposal to "establish a gold standard in India;" they advise "without hesitation," the "abolition of the duty on silver plate;" they think that "it might be worth while to meet the great commercial nations on any proposal which would lead to a more extended use of silver;" and they suggest the issue of small notes based on silver—although indeed to this last proposition Sir John Lubbock and Mr. Birch express their dissent in a separate note.

Part III of the report is comparatively brief; and contains the views of the bimetallist section of the commissioners. They think that the "gravity of the evils" occasioned by the recent changes has been "much underestimated" by their colleagues. They hold that it is "almost impossible to distinguish" between those causes of the fall of prices which originate in circumstances affecting the commodities themselves, and those which may be traced to the monetary policy of particular nations; but that, assuming the possibility of the distinction, "it is to monetary causes that the larger share of the general fall must be ascribed," because the influences affecting production and transport which are cited were in operation before the "rupture of the bimetallic par," and "silver prices have not fallen." The Indian people again, they contend, it must be remembered, are affected by financial uncertainty as well as the Government; the trade of the United Kingdom with India would, they urge, have been larger than it is but for monetary disturbances; the foreign and internal trade and industry of this country has, they maintain, been injuriously affected by the same disturbances, and the burden of our national debt at home has been increased while the extension of a free trade policy abroad has been checked. The objections raised against bimetallism have, they argue, had "undue importance attached to them." It is not "novel," and it would not endanger the "financial preeminence of London" which "dates back to a time anterior to the establishment of the single gold standand." Nor can a "sufficient motive" be suggested "for the secession of any of the contracting powers" from the proposed bimetallic arrangement; and specific contracts for payment in gold are inconceivable in the face of such an "amount of popular support" as would be required to secure the introduction into this country of the double standard. Nor, lastly, is a determination of "the particular ratio to be adopted" a "necessary preliminary to the opening of negotiations;" but this point, together with other matters of detail, might be "left for further discussion and settlement between the parties interested." In conclusion, the commissioners express their approval of the minor reforms recommended by their colleagues, although they "do not attach much importance to their probable direct effects." Two lengthy notes are appended to this section, one by Sir Louis Mallet, and the other by Mr. Barbour, stating at greater length the reasons for affixing their signatures; and in a separate note Mr. Montagu expresses his preference for the ratio of 20 to 1. Sir Louis Mallet holds that there has been appreciation of gold and also depreciation of silver and commodities in relation to gold; and that the present state of things is neither monometallic nor bimetallic in the popular sense of the term; Mr. Barbour considers that the "question of the appreciation of gold or depreciation of silver is really subsidiary to the main issue," which is, "whether the changes in the relative values of the precious metals are causing serious evils, and whether it is possible to remove those evils without causing other evils equally great."

1. *Statistics and Economics.* By Richmond Mayo Smith. (Vol. iii, Nos. 4 and 5 of the publications of the American Economic Association.) New York: Gustav E. Stechert, 1888.

2. *The National Bureau of Labour* and *Industrial Depressions.* By Richmond Mayo Smith. (The *Political Science Quarterly*, vol. i, No. 3.) London: Henry Frowde, 1886.

3. *Wage Statistics and the next Census of the United States.* By Richmond Mayo Smith. (*Quarterly Journal of Economics*, vol. ii, No. 4.) London; Macmillan and Co., 1888.

4.} *Control of Immigration.* By Richmond Mayo Smith.
5.} (*Political Science Quarterly*, vol. iii, Nos. 1—3.)
6.} London: Henry Frowde, 1888.

There is perhaps no more significant feature of recent economic and statistical study than the increasing tendency to emphasise the closeness of their connection with one another. On the one hand, as Professor Richmond Smith urges in the publication we have placed at the head of the foregoing list, continental statisticians have claimed that there is a statistical science, a branch of sociology, and not merely a statistical method which can be employed by the sciences; and on the other the movement towards a more extensive use of induction, which has undoubtedly taken place in economic study, has itself resulted in greater attention to statistics. The present moment is then a fitting opportunity for examining the nature of this connection; and Professor Richmond Smith accordingly endeavours to show that statistics may supply the social investigator with three different kinds and degrees of knowledge. They may be merely descriptive; they may, through the observation of a large number of cases, "reveal certain facts which are not otherwise revealed," and they may "bring phenomena into juxtaposition so that one is the explanation of the other." This wide conception of the work of statistics is apparent throughout the articles we have enumerated at the head of this notice; and it is in the varied development given to the conception that we can detect their connecting links. The first three may perhaps be said to supply, from different points of view, an investigation of the nature of the machinery at the command of the statistical inquirer, and the last three to furnish an example of the employment of this machinery in the determination of an economic problem of practical importance. For it is really to a statistical test that Mr. Smith brings the question of the control of immigration into the States, and the validity of his conclusions depends in the final resort on statistical arguments. It is true that in the third of his articles he raises a question of principle which may at first sight seem to have no connection with statistics. He argues that freedom of emigration is "no natural inherent right of the individual," but merely a historical right of very recent date which has not yet met with universal recognition; and he has little difficulty in showing that the diplomatic relations of the United States would, in all probability, not be adversely affected by restrictions on immigration. The right to exclude immigrants is, he contends, "from the side of international law," "perfect;" and is merely a logical extension of commercial protection. But even this discussion of political principle is really decided by a statistical test. For, he argues, the real "duty of every nation to humanity is to see to it that the higher civilisation" triumphs "over the lower;" and it "performs this duty best by preserving its own civilisation against the disintegrating forces of barbarism." This is its duty not only to humanity at large, but to its own citizens as well; and therefore the control of immigration is justified if the immigrants are likely to lower the standard of civilisation. But then the question is at once suggested: Is this likely to be the result of uncontrolled immigration into America? And it is this question which is discussed in the first two articles. Mr. Smith considers in the former the social effects of immigration on the United States, and in the latter he endeavours to answer the question whether the Americans need the immigrants. Both these inquiries are brought to a statistical test. American statistics show that "out of every three white persons whom you meet in the street, one is of foreign birth, or at least of foreign parentage;" and not only is it in the populous northern States, where the factory system has attained development, that this foreign element has its main strength, but it also gains additional force because it contains "so large a proportion of adults." Of its extent then there is no doubt, and the character of the immigrants is of the utmost importance. This, Mr. Smith urges, has changed for the worse. The increased facilities of transport have allowed all classes of the community to come; and "it is more and more the lower classes that are coming." Statistics of emigration from Ireland, from Germany, and from Italy, together with indirect testimony from the American bureaus of labour, supply the basis of this argument; and Mr. Smith proceeds to inquire whether such immigrants as these are needed by the States. Here again he answers the question by statistical evidence. He holds that the "natural increase" of the native element may now be "sufficient" without the addition of immigrants; that the money they bring with them is, on the whole, not "worth considering;" that their "economic value" is indeed great, but is not "to be measured by any mere calculation of what it cost to bring" them "up, or even by estimating the net value of" their "future earnings." It "depends on the use that can be made" of them; and, at present, the States have, he contends, no need of an extraneous supply of that unskilled labour, of which the immigrant element largely consists. They only bring on the labouring classes a competition which threatens to "lower the standard of living." On all these points Mr. Smith relies chiefly upon statistical evidence, and he is constantly led to appraise the value of particular statistical methods. And so these three articles, which are certainly marked by lucid and powerful reasoning, and, although tending to a different conclusion from that which might be entertained in the countries from which the immigrants come, represent a feeling which seems to be growing in America, are connected with the other three publications that we have included in the list of his writings. The first of these is of a general character, and aims at showing "how far we have been directed towards general social laws by means of statistical observation." Mr. Smith accordingly reviews in outline the most common statistics—those relating to population, at once the best known and the most practically important—those which are more peculiarly economic, and are concerned with the production, the distribution, and the exchange of wealth—and, thirdly and lastly, the statistics of vice and crime. This review is accompanied by brief comments on the general results of the statistics, and on the use to which they can be properly put. Throughout the review Mr. Smith has followed closely Professor Mayr's treatise; and has also availed himself largely of Dr. Neumann Spallart's researches. His own treatment is concise and suggestive. In the third number of the first volume of the *Political Science Quarterly* he discusses the more special topic of the then recently established National Bureau of Labour in America. It will, he thinks, "mark an important departure in the attempt to gain knowledge of social conditions." It will tend to secure that most desirable object, uniformity of method; and its first investigation into industrial depressions seemed to offer a hope, not perhaps fully realised, of that "union of theoretical knowledge and practical aquaintance with affairs" which was "necessary to explain phenomena at once so concrete and so intricate." In the other article on wage statistics and the next census, Mr. Smith is again engaged in the examination of the machinery of statistics. He urges that statistics of wages should aim primarily, not at deciding any question—for this they can rarely do—of "technical economic distribution," but at determining the question of "social" distribution. The effort to get these statistics should, he thinks, be confined to the "large industries," where alone labour is of anything like an uniform quality, and where wages are "as a rule the full earnings of the labourer," and "represent a definite payment for specific services." They should be "obtained from employers;" they should be "carefully distinguished" as to industries, occupations, sex and age, and districts. They should be returns of actual wages, and not estimates merely; they should be collected by "experts;" and conclusions should be drawn from them by means of proportions showing how many of the men receive a certain income, how many less, and how many more. "You cannot," Mr. Smith concludes by saying, "have scientific statistical results unless you employ scientifically trained statisticians." These words imply a high standard which we venture to think Mr. Smith's own writings do much to exemplify. They are marked by an acute appreciation of the many dangers and difficulties of statistics, and yet they are full of a confident and reasoned belief in their utility and importance. Mr. Smith possesses both economic and statistical knowledge, and he promises to effect an abiding and fruitful union between them.

VI.—*Additions to the Library.*

Additions to the Library during the Quarter ended 31*st December*, 1888, *arranged alphabetically under the following heads:*—(a) *Foreign Countries;* (b) *India, Colonial and other Possessions;* (c) *United Kingdom and its several Divisions;* (d) *Authors, &c.;* (e) *Societies, &c.* (*British*); (f) *Periodicals, &c.* (*British*).

Donations.	By whom Presented.
(a) **Foreign Countries.**	
Argentine Republic—	
Estadistica del Comercio y de la Navegacion de la Republica Argentina correspondiente al año 1887. Diagram, 8vo.	**The General Statistical Bureau, Buenos Ayres**
Los Presupuestos, los Recursos y las Leyes de Impuestos de la Nacion las 14 Provincias y las principales municipalidades. Año 1887. La 8vo.	
SANTA FÉ. Primer Censo General de la Provincia de—Junio 1887. Libro I. Censo de la Poblacion. Plates, plans and diagrams. Fol. 1888	
BUENOS AYRES. Boletin mensual de Estadistica Municipal. Año II, July—October, 1888	**The Municipal Statistical Bureau**
Austria and Hungary—	
Oesterreichische Statistik—	
Band xv. Statistik der Rechtspflege. Heft 3. Ergebnisse der Strafrechtspflege, 1884	**The Central Statistical Commission**
Band xviii. Heft 1. Bewegung der Bevölkerung, 1886. Heft 3. Statistik der Sparcassen, 1886. Heft 4. Statistik des Sanitätswesens, 1885	
Statistisches Jahrbuch des k.k. Ackerbau-Ministeriums für 1887. Drittes Heft. Der Bergwerksbetrieb Österreichs, 1887. 1^{e} Lieferung. 8vo.	—

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Austria and Hungary—*Contd.*	
Statistische Monatschrift. October—December, 1888 Wochenausweis der Sterbefälle in den grösseren österreichischen Städten und Gemeinden. (Current numbers)	The Central Statistical Commission
Hungary—	
Magyarország Aruforgalma Ausztriaval es mas Orszagokkal. Fuzet 6—8. (Monthly Trade Returns)	The Royal Hungarian Statistical Bureau
Mittheilungen des kön. ung. Ministeriums für Ackerbau, Industrie und Handel. IV Jahrgang, 1888. Hefte 9, 10	The Ministry of Agriculture, &c.
Statistisches Jahrbuch für Ungarn. 1886. Heft 5, Handelsverkehr. Heft 6, Die Creditinstitute .... Ungarns Waarenverkehr mit Oesterreich und anderen Ländern, für das Halbjahr 1888, vom Monate Jänner bis ende Juni	The Royal Hungarian Statistical Bureau
Budapest. Resultate der am 1 Juli, 1886, durchgeführten Conscription der Bevölkerung Budapest's....	—
Prague. Bulletin hebdomadaire de la Ville de—, et des Communes-faubourgs. (Current numbers)........	The Statistical Bureau of Prague
Mittheilungen der Gesellschaft Oesterreichischer Volkswirthe. 1 Jahrgang, 1888-89. 1 Heft. 8vo. Wien, 1889	The Society
Belgium—	
Annales des Travaux Publics. 2ᵉ Cahier. Tome xlvi. ("Statistique des mines, minières, carrières, &c., pour 1887, &c.")	The Administration of Mines
Tableau Général du Commerce avec les Pays Étrangers pendant 1887. Fol.	The Secretary of State for Foreign Affairs
Tableau du Mouvement Commercial avec les Pays Étrangers. Août—Octobre, 1888	The Ministry of Finance
Bruxelles—	
Annuaire de la Mortalité ou Tableaux Statistiques des causes de Décès et du Mouvement de la Population, 1ᵉ Année, 1862; 12ᵉ, 1873; et 14ᵉ, 1875. 3 parts, diagrams, 8vo. Bulletin hebdomadaire de Statistique Démographique et Médicale, No. 39, 1886. (Current numbers for 1888)	Dr. E. Janssens, Brussels
Bruges. Verslag over het Bestuur en den Toestand van Stadszaken, 1887. 8vo.	The Burgomaster
Hasselt. Exposé de la Situation administrative de la Ville de—. Exercice 1887-88. 8vo.	„
Brazil. Relatorio do Ministerio dos Negocios do Imperio em 1886. Fol.	—
China. Imperial Maritime Customs. I Statistical Series, No. 2, Customs Gazette. April—June, 1888	Sir Robert Hart, K.C.M.G., Peking
Denmark. Nationalökonomisk Tidsskrift. Ny Række. Hefte 5, 6, 1888	The Danish Political Economy Society

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Egypt. Daira Sanieh of H.H. the Khedive of Egypt. Note upon the Results of the Year 1887. 8vo.	C. M. Kennedy, Esq., C.B.
France—	
Annales du Commerce Exterieur. Situation Economique et Commerciale de la France. Exposé comparatif pour la période 1863-77. La. 8vo.	Dr. F. J. Mouat
Ministère de l'Agriculture. Bulletin. VII^e année, Nos. 5 et 6, 1888	The Ministry of Agriculture
Ministère des Finances. Bulletin de Statistique et de Législation comparée. Septembre—Novembre, 1888	The Ministry of Finance
Ministère des Travaux Publics. Bulletin. Statistique et Legislation comparée. Août, 1888	The Ministry of Public Works
Statistique Générale de la France. Résultats Statistiques du Dénombrement de 1886. 1^{er} Partie, France. Maps and diagrams, la. 8vo.	The French Government
Tableau Général du Commerce de la France avec ses Colonies et les Puissances Étrangères pendant 1887. La. fol.	The Under-Secretary of State for Foreign Affairs, London
Paris—	
Annuaire Statistique de la Ville de Paris. VII^e année. 1886. Diagrams. Large 8vo.	Dr. J. Bertillon, Paris
Bulletin Récapitulatif de Statistique Municipale, années 1872-79. 8 parts. Plans. 4to.	Dr. F. J. Mouat
REIMS. Bulletin mensuel du Bureau Municipal d'Hygiène. Septembre, Octobre, 1888	The Bureau of Hygiene
L'Economiste Français. (Current weekly numbers)	The Editor
Revue des Banques. Recueil mensuel des Institutions de Credit et de Prévoyance. Tome vii, fasc. 10—12. 1888	M. E. Fournier de Flaix, Paris
Revue Bibliographique Universelle—	
Partie Littéraire. Septembre—Decembre, 1888 „ Technique. „ „ 1888	The Editor
Revue Géographique Internationale. Nos. 152 and 153. 1888	„
Revue d'Economie Politique. II^e année, 1888. Nos.— 5. De la Science Economique Moderne. (2^e Article): *H. D. Macleod.* Les Caisses rurales d'Epargne et de Prêts Mutuels en Allemagne et en Italie: *G. Maurin.* De l'aggravation des Impôts et des moyens de l'enrayer: *L. Wuarin.* Les deux Sens de la Valeur: *M. Tarde* 6. Les deux Sens de la Valeur: *M. Tarde.* Contribution à la Théorie du Capital: *C. Menger.* La question de la protection internationale des Travailleurs: *E. Mahaim*	The Publishers
Annales de l'Ecole Libre des Sciences Politiques. III^e année, No. 4, 1888. (Contents.) La Conception populaire de la Royauté en Angleterre: *E. Boutmy.* La Vie Municipale en Prusse, Bonn, Une ville de la Province du Rhin: *M. Leclerc.* De l'organisation des Partis Politiques aux Etats-Unis: *M. Ostrogorski.* Le Budget des grandes routes en France: *D. Zolla.* La Politique Coloniale de Choiseul: *D'Aubigny*	The School

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
France—*Contd.*	
Journal de la Société de Statistique de Paris. 1888— Novembre. Les Résultats Statistiques du dernier Dénombrement: *T. Loua.* Le Commerce de la France, en 1887: *E. Minot.* La Marine Marchande du Globe: *M. Hoffmann* .... Decembre. Mouvement de la Population de la France pendant 1887: *V. Turquan.* Paris en 1887: *T. Loua*	The Society
Germany—	
Monatshefte zur Statistik des Deutschen Reichs. August—October, 1888 .... *Statistik des Deutschen Reichs. Neue Folge*— Band xxxii. Die Volkszählung im Deutschen Reich am 1 Dezember, 1885. Diagram-map .... Band xxxv, Abth. 2. Statistik der Seeschiffahrt für 1887	The Imperial Statistical Bureau
Gesetz betreffend die Krankenversicherung der Arbeiter vom 15 Juni, 1883 . . . 8vo. 1884.......... Entwurf eines Gesetzes betreffend die Unfallversicherung der Arbeiter nebst Motiven. Fol. 1884	Mrs. Levi, London
PRUSSIA. *Preussische Statistik*— xcv. Die Sterblichkeit nach Todesursachen und Altersklassen der Gestorbenen sowie die Selbstmorde und Verunglückungen, 1886 .... xcvi. Die endgültigen Ergebnisse der Volkszählung, vom 1 Dezember, 1885. Diagrams .... xcvii. Die Ergebnisse der Ermittelung des Ernteertrages, für 1887. Diagrams	The Royal Statistical Bureau of Prussia
Saxony— Kalender und Statistisches Jahrbuch für das Königreich Sachsen, 1889. 8vo.......... Zeitschrift des K. Sächsischen Statistischen Bureaus. Jahrgang 1887. Heft 3 und 4. 4to.	The Royal Statistical Bureau of Saxony
Berlin— Statistisches Jahrbuch der Stadt Berlin. Dreizehnter Jahrgang. Statistik des Jahres 1885. 8vo. .... Veröffentlichungen des Statistischen Amts der Stadt Berlin. Eheschliessungen, Geburten, Sterbefälle und Witterung. (Current numbers)	The Statistical Bureau of Berlin
BRESLAU. Breslauer Statistik. Elfte Serie. Viertes Heft. Diagrams, 8vo. 1888	—
Archiv für Soziale Gesetzgebung und Statistik. I^{er} Jahrgang. Drittes und Viertes Heft. 8vo. 1888	The Publisher
Greece. Bulletin mensuel du Commerce avec les Pays Étrangers. Août, 1888	The Statistical Bureau of Greece
Italy—	
Annali di Agricoltura, 1888. No. 155. Esperienze ed Applicazioni del Metodo curativo col Solfuro di Carbonio nei Vigneti Fillosserati in Italia	The Director-General of Agriculture
Annali di Statistica. Statistica Industriale. Fasc. 13. (Provincie di Forli e di Ravenna.) Map	—

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Italy—*Contd.*	
Atti della Commissione Reale per l'Inchiesta sulle Opere Pie. Vols. v e vi. 8vo. 1887	—
Bollettino del Ministero degli Affari Esteri. Parte Prima. Vol. ii. 1888	The Director-General of the Statistics of Italy
La Provincia di San Paolo. (Brasile.) Rapporto dell' avv. Enrico Perrod, regio Vice Console à San Paolo. 8vo. 1888	
Bollettino di Legislazione e Statistíca Doganale e Commerciale. Anno v. Luglio—Novembre, 1888	
Bollettino mensile delle situazioni dei Conti degli Istituti d'Emissione. Anno xix, Nos. 6—9. 1888	
Bollettino di Notizie sul Credito e la Previdenza. Anno vi, Nos. 10—12. 1888	
Bollettino Settimanale dei Prezzi di alcuni dei principali Prodotti Agraria e del Pane. (Current numbers)	
Bollettino Sanitario (Direzione della Sanita Pubblica). Agosto—Settembre, 1888	
Notices Bibliographiques et Résumé des principales Publications Statistiques du Royaume d'Italie depuis la 7^{e} Session du Congrès Statistique. 8vo. 1872	Dr. F. J. Mouat
Relazione Statistica sui Telegrafi del Regno d' Italia nell' anno finanziario 1886-87. Fol.	The Director-General of the Statistics of Italy
Statistica del Commercio Speciale di Importazione e di Esportazione. Luglio—Ottobre, 1888	
Statistica della Emigrazione Italiana nell' anno 1887. Compendio delle Leggi e Regolamenti sull' emigrazione vigenti in varii Stati d' Europa	
Statistica Giudiziaria Civile e Commerciale 1886	
Statistica Giudiziaria Penale per l' anno 1886. Maps	
L'Economista. (Current weekly numbers.) Florence	The Editor
Giornale degli Economisti. Vol. iii. 1888. Fasc. 6. (Contents.) Sul controprogetto di legge sulla emigrazione: *C. Rosmini.* Le dottrine finanziarie in Inghilterra fra la fine del secolo xvii e la prima metà del xviii: *G. R. Salerno.* Tributi ed amministrazioni locali: *L. Rameri*	"
Netherlands—	
Statistiek van den handel en de scheepvaart van het Koningrijk der Nederlanden. 1846-76. 41 vols. Fol.	The Department of Finance
Statistiek van den in-, uit- en doorvoer van het Koningrijk der Nederlanden. 1877-87. 22 vols. Fol.	
Statistiek der Geboorten en der Sterfte, naar den Leeftijd ende oorzaken van den dood in Nederland. July—September, 1888	The Department of the Interior
Statistiek der Scheepvaart, 1886. Derde Gedeelte. 4to.	The Netherlands Legation
Verslagen aan den Koning betrekkelijk den dienst der Rijkspostspaarbank in Nederland, 1887. (Post Office Savings Banks.) 4to	The Director of Post Office Savings Banks
Paraguay. Revue du Paraguay. Nos. 5 and 6 I^{e} année, 1888. 8vo.	The General Statistical Bureau

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Russia—	
Commerce Extérieur par la frontière d'Europe. Juillet—Septembre, 1888. (In Russian)	The Department of Customs
Journal of the Ministry of Finance. (Current weekly numbers.) (In Russian). 1888	M. A. Vessélovsky, St. Petersburg
Spain—	
Estadistica General del Comercio Exterior de España con sus Provincias de Ultramar y Potencias Extranjeras en 1887. fol.	The Director-General of Customs
Direccion General de Beneficencia y Sanidad. Boletin de Sanidad correspondiente al mes de Marzo—Agosto, 1888. 6 vols. 8vo.	—
Memorias Comerciales y Suplemento, 1888—	
Memoria sobre Valoraciones de la Aduana de Irún. pp. 171—266. 1888	The Board of Customs
Memoria de Valoraciones de la Aduana de Santander. pp. 1—166. 1888	
Boletin de la Sociedad Geográfica de Madrid. Tomo xxv, Nos. 1 y 2. 1888	The Society
Sweden and Norway—	
SWEDEN. Statistisk Tidskrift. Nos. 1, 2. 1888	The Central Statistical Bureau, Sweden
NORWAY. *Norges Officielle Statistik. Tredie Række*—	The Central Statistical Bureau, Norway
59. Tabeller vedkommende Norges Skibsfart, 1886. (Navigation)	
61. Tabeller vedkommende Arbeidslonninger, 1875, 1880 og 1885 samt delvis tidligere Aar. (Wages of Working Men)	
62. Rekruteringsstatistik for den norske Armee, 1887. (Recruiting)	
63. Tabeller vedkommende Norges Handel, 1887. (Trade)	
64. Fattigstatistik, 1884 og 1885. (Poor Relief)	
65. Tabeller vedkommende Norges Sparebanker, 1887. (Savings Banks)	
66. Tabeller vedkommende Norges Postvæsen, 1887. (Postal)	
67. Den norske Statstelegrafs Statistik, 1887. (Telegraphs)	
68. Livs-og Dodstabeller for det norske Folk efter Erfaringer fra Tiaaret 1871-72—1880-81. (Tables of Mortality and Survivorship)	
69. Tabeller vedkommende Norges Kriminalstatistik, 1885. (Criminal Statistics)	
70. Oversigt over de vigtigste Resultater af Norges Kriminalstatistik, 1846-85. (Criminal Statistics)	
71. Beretning om de Spedalske i Norge i Femaaret 1881-85. (Leprosy)	
72. Beretning om Rigets Strafarbeidsanstalter for aaret 1886-87. (Convict Labor)	
Supplement til anden Række. C. No. 5. Tabeller over de Spedalske i Norge, 1880, med Aarsberetninger for samme Aar samt oversigt over Spedalskhedens Gang 1856-80. (Leprosy)	

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
Switzerland—	
Statistique de la Suisse. 73e Livraison. Mouvement de la Population de la Suisse pendant 1887	The Federal Statistical Bureau
Journal de Statistique Suisse, 1888. 3. Quartal-Heft	
Aargau—	
Aargauische Statistische Mittheilungen für das Jahr 1888. Heft 1. Fol.	The Statistical Bureau of Aargau
Das Armenwesen im Aargau und die Reformbestrebungen. Mit Berücksichtigung der Arbeiterversicherung. 8vo. 1888..................................	
Die obligatorische Kranken-Versicherung für Arbeiter im Kanton Aargau. 8vo. 1886............	
BASEL-STAT. 53ter Verwaltungs-Bericht des Regierungsrates und 40ster Bericht des Appellations-Gerichts über die Justizverwaltung vom Jahre 1886. Diagram. 8vo.	—
United States—	
Report of the Commissioner of Agriculture for 1884. Plates and diagrams	Major P. G. Craigie
Department of Agriculture. Monthly Reports on the Condition of Crops, &c. September—November, 1888	The Department of Agriculture
Summary Statement of Imports and Exports. Nos. 1—4, 1888-89	The Bureau of Statistics, Treasury Department
Quarterly Report on Imports, Exports, Immigration, and Navigation for the three months ending 30th June, 1888. [No. 4. 1887-88]	
Annual Report on the Foreign Commerce of the United States for the year ending June, 1888	
Third Annual Report of the Commissioner of Labor, 1887. Strikes and Lockouts	The Commissioner
Reports from the Consuls of the United States. Nos. 93—96. May—August, 1888. 4 parts, 8vo............	The Department of State
Maps showing the Location of the Diplomatic and Consular Offices of the United States of America. 1st March, 1888. Obl. fol.	
Annual Report of the Secretary of the Treasury on the State of the Finances for 1888	The Secretary of the Treasury
Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Vol. ix, Medicine (Popular) to Nywelt. 1888	The Surgeon-General, U.S. Army
The Medical and Surgical History of the War of the Rebellion. Part III, vol. i. Medical History. Plates and diagrams. 4to., 1888	
MICHIGAN. Fourteenth Annual Report of the State Board of Health for the year ending September, 1886. Diagrams, 8vo.	—
NEW JERSEY. Eleventh Annual Report of the Board of Health and Report of the Bureau of Vital Statistics. 1887. Diagrams, 8vo.	—
New York State—	
Fifth Annual Report of the Bureau of Statistics of Labor for 1887. Strikes of 1887, &c.	The Bureau
Report on School Hygiene, being a Sanitary Examination of the Condition of the Public Schools of the Interior. 8vo., 1888...........................	—

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
United States—*Contd.*	
RHODE ISLAND. Monthly Reports of Deaths in the City of Providence. Nos. 399—401. 1888	Dr. E. M. Snow, Providence
Bankers' Magazine. September—December, 1888	The Editor
Bradstreet's Journal. (Current weekly numbers.) 1888	"
Commercial and Financial Chronicle. (Current weekly numbers.) 1888	"
American Geographical Society. Bulletin. Vol. xx, No. 3. 1888	The Society
Franklin Institute. Journal. September—December, 1888	The Institute
Political Science Quarterly. Vol. iii, 1888. No. 4. (Contents.) Socialism in English Politics: *W. Clarke.* Public Business Management: *A. T. Hadley.* The Legality of "Trusts": *T. W. Dwight.* The Electoral Count: *J. W. Burgess.* The Ballot in England—History and Workings: *E. Goadby.* Legal Incidents: *H. H. Asquith*	The Editor
Quarterly Journal of Economics. Vol. iii, 1888. No. 1. (Contents.) The Austrian Economists and their view of Value: *J. Bonar.* Some Precedents followed by Alexander Hamilton: *C. F. Dunbar.* A New View of the Theory of Wages: *S. Wood.* The Australian Tariff Experiment: *F. P. Powers*	G. H. Ellis, Esq., Boston
American Academy of Arts and Sciences—	
Memoirs. Centennial Volume. Vol. xi, Part v, No. 6; and Part vi, No. 7. Plates, 4to., 1887-88 Proceedings, New Series. Vol. xv, Part i, plates, 8vo., 1888	The Academy
American Economic Association. Publications. 8vo., 1886-88—	
Vol. i No. 1. Report of the organization of the American Economic Association: *R. T. Ely.* Nos. 2 and 3. Relation of the modern Municipality to the Gas supply: *E. J. James.* No. 4. Coöperation in a Western City: *A. Shaw.* No. 5. Coöperation in New England: *E. W. Bemis.* No. 6. Relation of the State to Industrial Action: *H. C. Adams* .... Vol. ii. No. 1. Three Phases of Coöperation in the West: *A. G. Warner.* No. 2. Historical Sketch of the Finances of Pennsylvania: *T. K. Worthington.* No. 3. The Railway Question. The Report of the Committee on Transportation of the American Economic Association, and The Agitation for Federal Regulation of Railways: *E. J. James.* No. 4. The Early History of the English Woollen Industry: *W. J. Ashley.* No. 5. Two Chapters on the Mediæval Guilds of England: *E. R. A. Seligman.* No. 6. The Relation of modern Municipalities to *quasi* Public Works, being the Report of the Committee on Public Finance to the American Economic Association Vol. iii. No. 1. Statistics in Colleges: *C. D. Wright.* Sociology and Political Economy: *F. H. Giddings.*	The Association

Donations—Contd.

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
United States—*Contd.*	
American Economic Association. Publications—Contd.	
The Legal-Tender Decisions: *E. J. James.* No. 2. Capital and its Earnings: *J. B. Clark.* No. 3. The Manual Laboring Classes: *F. A. Walker.* Mine Labor in the Hocking Valley: *E. W. Bemis.* Report of the Second Annual Meeting of the Association: *R. T. Ely.* Nos. 4 and 5. Statistics and Economics. An Outline of Statistical Science, with especial reference to the use of Statistics in Political Economy and Social Science. *R. M. Smith.* No. 6. The Stability of Prices: *S. N. Patten*	The Association
American Philosophical Society. Transactions. Vol. xvi. New series, part 2, 4to. Plates. 1888	The Society
American Statistical Association. Publications. New series. No. 1. Statistics of Water Power employed in manufacturing in the United States, by G. F. Swain. 44 pp., maps, 8vo. Boston, 1888	—
Smithsonian Institution. *Smithsonian Miscellaneous Collections.* 1888—	
Vol. xxii. The Constants of Nature. Part 1. A Table of Specific Gravity for Solids and Liquids: *F. W. Clarke.* Index to the Literature of the Spectroscope: *A. Tuckerman* Vol. xxiii. Bulletin of the Philosophical Society of Washington. Vols. vi—x. 1883-87. Portrait	The Institution
Uruguay—	
Anuario Estadistico. Año 1885 y año 1886. 2 vols., la 8vo. Diagrams Commercio Exterior correspondiente al año 1887 comparado con 1886 Direccion de Estadistica General. Cuaderno, Nos. 13 y 14. 1883-84. Diagrams, la 8vo.	The Bureau of Ge eral Statistics
The Uruguay Republic. Territory and Conditions. 35 pp. Map, 8vo. 1888	The Consul-General for Uruguay, Lo don
Venezuela. Gaceta Oficial. (Current numbers.) 1888	Statistical Bureau
International—	
Commission Permanente du Congrès International de Statistique. 4ᵉ Session, Paris. Procès-Verbaux des Séances, Programme, Bulletins, &c. 4to. 1878 *Congrès Penitentiaire International, Rome.* 8vo. 1885— Actes publiés par les soins du Comité exécutif. Tomes i et ii. Portrait. 1887-88 Album. Pensées et Maximes autographiques sur la réforme penitentiaire recueillies à l'occasion du Congrès de Rome. 1885	Dr. F. J. Mouat
Congrès International pour l'unification des Poids, Mesures et Monnaies, tenu à Paris, 1878. (No. 22 de la Série.) 8vo. 1880	Mrs. Levi

Donations.	By whom Presented.
(a) **Foreign Countries**—*Contd.*	
International—*Contd.*	
Internationaler Congress für Hygiene und Demographie zu Wien. 8vo. 1887—	
iv. Demographischer Congress. Arbeiten der Demographischen Section. 5 parts, diagrams. 1887-88	Francis Jourdan, Esq., London
vi. Congress für Hygiene. Arbeiten der Hygienischen Sectionen. 4 parts, plans. 1887-88	
List of Members, Resolutions adopted by the Congress, Catalogue of Publications, Programme, &c. 6 parts, plans and diagram. 1887-88	
Institut International de Statistique. Bulletin. Tome iii. 2ᵉ livraison, année 1888. (Contents.) Local Taxation in Great Britain: *P. G. Craigie.* Comparative Statistics of Railroad Service: *A. T. Hadley.* The Influence of Immigration on the United States of America: *R. M. Smith.* Appunti di Statistica comparata dell' emigrazione dall' Europa e della immigrazione in America e in Australia. Saggio di rappresentazione della densità della popolazione mediante curve di livello eseguito da *G. Fritzsche* per le provincie di Genova e Torino. Carta altimetrica e batometrica dell' Italia, con nota illustrativa: *G. Cora.* Maps	The Director-General of the Statistics of Italy
(b) **India, Colonial, and other Possessions.**	
India, British—	
Report on Sanitary Measures in India in 1886-87, together with Miscellaneous Information up to June, 1888. Vol. xx. [C-5533.] 1888	The Record Department, India Office
Statement exhibiting the Moral and Material Progress and Condition of India during 1886-87. Twenty-third number. (349) 1888	
Review of the Trade of India in 1887-88. Foreign Sea-borne, Coasting, and trans-frontier Trade. Fol.	The Department of Finance and Commerce, Calcutta
Trade and Navigation. Monthly Accounts. Nos. 4—7, 1888-89	
Trade by Land with Foreign Countries. Monthly Accounts. Nos. 2—4, 1888-89	
BENGAL. Its Chiefs, Agents, and Governors. 8vo. 1888	F. C. Danvers, Esq., London
Asiatic Society of Bengal—	
Journal. Vol. lvii, part I, Nos. 1 and 2; part II, Nos. 2 and 3, 1888. Plates	The Society
Proceedings. April—August, 1888. Plates	
Health Society for Calcutta and its Suburbs. Journal, 3 parts, 8vo. 1886-87	—
Canada, Dominion of—	
Sessional Papers, Session 1888. Vols.—	
vii. Report of Department of Marine for 1886-87. Report on Steamboat Inspection for 1887	J. G. Bourinot, Esq., LL.D., Ottawa
viii. Report of the Department of Fisheries for 1887. Report on Lobster and Oyster Fisheries, 1888. Special Report on the Fisheries Protection Service, 1887	

Donations—Contd.

Donations.	By whom Presented.
(b) **India, Colonial, and other Possessions**—*Contd.*	
Canada, Dominion of—*Contd.*	
Sessional Papers. Session 1888—*Contd.*	
ix. Report of Minister of Public Works, 1886-87. Report of Minister of Railways and Canals, 1886-87. Report of the Royal Commission on Railways. Railway Statistics for 1887	J. G. Bourinot, Esq., LL.D., Ottawa
x. Abstract of Statements of Insurance Companies in Canada for 1887. Report of Superintendent of Insurance for 1887	
xiv. Report of the Inland Revenues for 1886-87. Canal Statistics for 1886. Reports on Inspection of Weights, Measures, and Gas, also on Food Adulteration, 1887	
xvi. Reports and Correspondence upon Provincial Legislation, 1885-87. Papers relating to the Canadian Pacific Railways	
xvii. Report of the Commissioner of the North-West Mounted Police Force, 1887. Superannuations during 1887. Papers, &c., relating to the Fisheries Question	
Journals of the House of Commons, Session 1888. Vol. xxii	
Appendix to vol. xxii of the Journals of the House of Commons. Report of the Select Committee appointed to Investigate and Report upon alleged Combinations in Manufactures, Trade and Insurance in Canada. 1888	
Journals of the Senate of Canada. Vol. xxii, 1888	
Appendices to vol. xxii of the Journals of the Senate. Session 1888. Maps	
Official Report of the Debates of the House of Commons. Session 1888. Vols. i and ii. 4to.	
Report of the Select Committee on the Resources of the Great Mackenzie Basin. Maps. 1888	
Report of the Superintendent of Insurance for 1887	The Superintendent
Insurance and Finance Chronicle. Sept.—Nov., 1888	The Editor
Guiana, British. Report of the Registrar-General for 1887. Fol.	—
Jamaica. The Handbook of Jamaica for 1888-89; comprising Historical, Statistical, and General Information concerning the Island. Map, 8vo.	General Sir H. W. Norman, K.C.B.
Mauritius. Blue Book for the Colony of Mauritius, 1887; with Summary. Fol.	The Officer Administering the Government
New South Wales—	
Handbook of New South Wales for 1887 and previous years. Third issue. 8vo.	The Government Statistician
Statistical Register for the year 1887	W. Westgarth, Esq., London
Tables showing the Classification of Diseases, fatal to both sexes under and over 5 years, and the proportions per cent. of Deaths from each cause, during 1886 and 1887. 2 slips	The Government Statistician

Donations—Contd.

Donations.	By whom Presented.
(b) **India, Colonial, and other Possessions**—*Contd.*	
New Zealand. Reports on the Mining Industry of New Zealand. Plates, fol. 1888	The Mines Department
Queensland—	
Statistics of the Colony of Queensland for 1887. Diagram Supplement to the Government Gazette (containing Vital Statistics). Nos. 18 and 46. 1888	The Registrar-General of Queensland
Vital Statistics, 1886. Twenty-seventh Annual Report by the Registrar-General Report of the Registrar-General on the Returns of Agriculture and Live Stock for 1887	—
South Australia. Report of the Board of Governors of the Public Library, Museum, and Art Gallery, with the Reports of the Standing Committees for 1887-88...	The Secretary
Trinidad. Return showing quantity of Sugar made on each Estate during the year ended 30th June, 1888. Fol.	The Government Statistician
Victoria—	
Australasian Statistics, 1887. Preliminary Return. Tables 1 and 2. Slip Victorian Year Book for 1887-88. (Fifteenth Year of Issue.) Vol. i. Introductory Remarks, Population, Finance, Vital Statistics. 6 copies. 8vo.	H. H. Hayter, Esq., C.M.G., Government Statist
Victorian Year Book for 1886-87. (Fourteenth Year of Issue.) Map, 8vo	The Agent-General for Victoria, London
The Gold Fields of Victoria. Reports of the Mining Registrars for the quarter ended 30th June, 1888. Plans, &c. Annual Report of the Secretary for Mines and Water Supply, on the working of the Regulation and Inspection of Mines and Mining Machinery Act during 1887. Plates	The Department of Mines
Royal Society of Victoria. Transactions and Proceedings. Vol. xxiv, parts 1 and 2. Plates, 8vo. 1887-88	The Society
(c) **United Kingdom and its several Divisions.**	
United Kingdom—	
Agricultural Returns of Great Britain, with Abstract Returns for the United Kingdom, British Possessions, and Foreign Countries, 1888. [C-5493.] 1888	The Agricultural Department
Board of Trade Journal. October—December, 1888	The Board of Trade
Customs. Thirty-second Report of the Commissioners of Customs on the—, for the year ended 31st March, 1888. [C-5589.] 1888	The Commissioners
Local Government Board—	
Tenth Annual Report, 1880-81. Supplement containing Report and Papers on the use and influence of Hospitals for Infectious Diseases. Plates. [C-3290.] 1882	—
Seventeenth Annual Report, 1887-88. Diagrams, and map. [C-5526.] 1888	The Local Government Board

Donations—Contd.

Donations.	By whom Presented.
(c) **United Kingdom and its Divisions**—*Contd.*	
United Kingdom—*Contd.*	
Statistical Abstract for the several Colonial and other Possessions of the United Kingdom in each year from 1873-87. 25th No. [C–5507.] 1888	The Board of Trade
Trade and Navigation. Monthly Returns. September—November, 1888	"
Woods, Forests, and Land Revenues. Sixty-sixth Report of the Commissioners of—, (251). 1888	The Commissioners
City of London Livery Companies Commission. Report and Appendix. Vol. iii. [C–4073—ii.] 1884	Mrs. Levi
Historical Manuscripts Commission. Ninth and Tenth Reports, with Appendices. 1885-87	
Police (Counties and Boroughs). Reports of Inspectors for 1887. (19.) 1888	
Savings Banks, Return. (28.) 1886	
Sugar Bounties Conference. Correspondence and Proceedings of the—. [C–5259 and C–5260.] 1888	
Trade Reports, Miscellaneous Series. [C–4916.] 1887	
England—	
Births and Deaths in London, and in twenty-seven other great Towns. (Weekly Returns.) (Current numbers)	The Registrar-General of England
British Museum. Catalogue of Printed Books. 4 parts, 4to. 1888	The Trustees of the Museum
Metropolitan Board of Works—	
Annual Reports for 1864-65 to 1887. 24 vols. 8vo.	The Metropolitan Board of Works
Accounts in abstract showing the Receipts and Expenditure, also Summary Statements of all Contracts entered into, and of Moneys owing to, and Debts and Liabilities owing by the Board, for the years 1856-57 to 1887. 32 parts. Fol	
A collection of miscellaneous Returns and Reports relating to the Coal and Wine Dues, Drainage of London, Street Improvements, Water Supply, Rating, &c. 1865-88. 8vo. and fol. 41 parts	
Manchester—	
Royal Jubilee Exhibition, 1887. Report of the Executive Committee. Plans and Diagrams. 8vo. 1888	Sir Joseph C. Lee
Thirty-sixth Annual Report on the Working of the Public Free Libraries, 1887-88. 8vo.	The Librarian
Ireland—	
Births and Deaths in Dublin, and in fifteen of the principal Urban Sanitary Districts. (Weekly Returns.) (Current numbers)	The Registrar-General of Ireland
Quarterly Return of Marriages to June, Births and Deaths to September, 1888. No. 99	
Scotland. Births, Deaths, and Marriages in the eight principal Towns. (Weekly and Monthly Returns.) (Current numbers)	The Registrar-General of Scotland

Donations—Contd.

Donations.	By whom Presented.
(d) **Authors, &c.**	
Agriculture. Our Depressed—. "From Hand to Mouth." [Anon.] 12 pp., 8vo. 1888	C. M. Kennedy, Esq., C.B.
Anderson (Sir James). Cables in time of War, &c. 44 pp., 8vo. [1886.]	
Baker (A.). Southern Servia as a British Market. 12 pp., map, 8vo. 1888	
Borsari (Ferdinando). Geografia Etnologica e Storica della Tripolitania Cirenaica e Fezzan con cenni sulla Storia di queste regioni e sul Silfio della Cirenaica. 278 pp., 8vo. Napoli, 1888	The Author
Bourne (Stephen). Index-Numbers as illustrating the Progressive Exports of British Produce and Manufactures. 5 pp., 8vo. 1888	„
Brown (Mainwaring). The Wealth and Annual Production of New Zealand. 24 pp., 12mo. Dunedin, 1888	„
Cobden (Richard). The Three Panics: an historical Episode. 168 pp., 12mo. 1884	Mrs. Levi
Coghlan (T. A.). The Wealth and Progress of New South Wales, 1886-87. xviii + 577 pp., map, 8vo. Sydney, 1887	W. Westgarth, Esq.
Cournot (Augustin). Recherches sur les Principes Mathématiques de la Théorie des Richesses. xi + 198 pp. 1 plate of diagrams, 8vo. Paris, 1838	Professor H. S. Foxwell, M.A.
Crickmay (H.). Two Years' Gladstonism. The Foreign and Domestic Policy of England, 1869-70. 104 pp., 8vo. 1871	Mrs. Levi
Dowling (Charles H.). Measures and Weights of the Metric System, with English Equivalents. Illustrated sheet folded	
Fenton (J. J.). The Public Finances, Loans, and Statistics of Australia and Tasmania. 31 pp., 8vo. [Melbourne.] [1888]	The Author
Goirand (Leopold). Extract from a Treatise upon French Mercantile Law and the Practice of the Courts. 16 pp., 8vo. 1879	Mrs. Levi
Griffin (G. W.). New South Wales: Her Commerce and Resources. 293 pp., 8vo. Sydney, 1888	W. Westgarth, Esq.
Haggard (F. T.). Railways. Passenger Train Traffic and the Receipts and Cost per train mile considered. 12 pp., 8vo. Tunbridge Wells, 1888	The Author
Hardwick (Charles). The Present Insurance Crisis. 32 pp., 12mo	Mrs. Levi
Iversen (C. A.). Nogle Oplysninger om Kjobenhavns Brandforsikring i Tidsrummet 1731-1888. 22 pp., 8vo. Kjobenhavn, 1888	A. Petersen-Studnitz, Esq.
Jeans (J. S.). The Reconstruction and Revival of Italy. 30 pp., 8vo. 1888	The Author
Johnston (Rev. James). Corrected Statistics of the Church of Scotland. 16 pp., 8vo. Glasgow, 1874	Mrs. Levi
Levasseur (Emile). La Statistique Officielle en France. 68 pp., la 8vo. Nancy, 1885	
Levi (Leone).	
The Education of the Merchant. 16 pp., 8vo. 1868	
On Railway Economy. 15 pp., 8vo. [1870]	

Donations—Contd.

Donations.	By whom Presented.
(d) Authors, &c.—*Contd.*	
Levi (Leone)—Contd.	
The Theory and Practice of the Metric System of Weights and Measures. Second edition. vi + 130 pp., 8vo. 1871	Mrs. Levi
Estimate of the amount of Taxation falling on the Working Classes of the United Kingdom. 31 pp., 8vo. 1873	
Work and Pay: or Principles of Industrial Economy. Two courses of Lectures to Working Men . . . with Report of the Committee of the British Association on Combinations of Labourers and Capitalists. 151 pp., 8vo. 1877	
War and its Consequences. Economical, Commercial, Financial, and Moral. With proposals for the Establishment of a Court of International Reference and Arbitration. 94 pp., portrait, 8vo. 1881	
The Depression in Trade, its Causes and Remedies. The "*Pears*" Prize Essays by Edwin Goadby and William Watt. With an Introductory Paper by —. xxix + 99 pp., 8vo. 1885	
The Conditions of Success in Emigration. 15 pp., 8vo. 1886	
The Revival of Italian Industry. 12 pp.	
Maher (C.). Statistique Médicale de Rochefort (Charente Inférieure). xiii + 389 pp., plan and diagram, 8vo. Paris, 1874.	Dr. F. J. Mouat
Mayr (Georg von). Die Quellen der Sozialstatistik mit besonderer Rücksicht auf die Einrichtungen der Arbeiterversicherung. 59 pp., 8vo. Rome, 1888	The Author
Mulhall (Michael G.) The Growth of American Industries and Wealth. 15 pp., 8vo. 1888	„
Newdegate (C. N.) Five Letters on the Balance of Trade. Third edition. xxxix + xxix + 13 pp., 8vo. 1870	Mrs. Levi
Okoshi (M.). Le Japon. Jadis et Aujourd'hui. 23 pp., 8vo. Lyon, 1887	
Petersen-Studnitz (Aleksis). Forhandlingerne paa det Nordiske Nationalökonomiske Möde i Kjöbenhavn, 1888. 283 pp., 8vo. Kjöbenhavn, 1888	The Author
Ross (Agustin). El Impuesto al Ganado Arjentino. Folleto de Actualidad, 60 pp., 8vo. Valparaiso, 1888.	„
Scharling (Dr. William). Die Jetzige Geschäftsstille und das Gold. 31 pp., 8vo. Jena [1886]	Mrs. Levi
Schnapper-Arndt (Dr. G.). Zur Methodologie sozialer Enquêten. Mit besonderem Hinblick auf die neuerlichen Erhebungen über den Wucher auf dem Lande. 46 pp., 8vo. Frankfurt, 1888	M. F. B. Auffarth
Smith (C. M.). Trade Depression and Wasted Resources. 41 pp., 8vo. Sydney, 1887	Mrs. Levi
Smith (George). Stephen Hislop, Pioneer, Missionary, and Naturalist in Central India from 1844-63. x + 386 pp. Portrait and illustrations, 8vo. 1888	The Author
Smith (Samuel). The Industrial Training of Destitute Children. 24 pp., 8vo. 1885	Mrs. Levi
Söderholm (J. N.). The Ratio of Value between Gold and Silver as Money. 56 pp., 8vo. 1884	

Donations—Contd.

Donations.	By whom Presented.
(d) **Authors, &c.**—*Contd.*	
TRSATT (FRANK B.). Some Sociological Phases of Strikes. 12 pp., 8vo. Sydney, 1888. (Six copies)	The Author
VAN DE LINDE (GÉRARD). A Merchant's Accounts. Second edition, 57 pp., 8vo. 1888	,,
WALRAS (LEON). Eléments d'Economie Politique Pure. 197 pp., diagrams, 8vo. Lausanne, 1877	Mrs. Levi
WATERHOUSE (ALFRED). A Chapter in the History of Strikes. 22 pp., 8vo. Manchester, 1865	
WEMYSS (EARL OF). Socialism at St. Stephen's, 1886 and 1887, with Appendix of Socialistic Acts and Bills, 1870-87. 59 pp. 1888	The Author
Westgarth, (William)—	
The Battle between Free Trade and Protection in Australia. 14 pp., 8vo. 1887	Mrs. Levi
Sketch of the Nature and Limits of a Science of Economics. Second issue. 47 pp., 8vo. 1887	
(e) **Societies, &c. (British).***	
Amalgamated Society of Railway Servants. Return of the Hours of Duty and Rates of Wages paid to Railway Servants on the principal Lines in Great Britain. 17 pp., 8vo. 1884	,,
Association of Chambers of Commerce. Report and Resolutions of the General Meeting held at Cardiff, September, 1888. 8vo.	C. M. Kennedy, Esq., C.B.
Association for the Consideration of the Amalgamation of Manchester and Salford. Report of the Joint Executive Committees . . . together with the Reports of the Consulting Accountant and the various Sub-Committees. Fol. Manchester, 1888............................	The Association
British Iron Trade Association. Production of open-Hearth and Bessemer Steel, and Pig Iron, in the first half of 1888. Sheets, fol.	,,
Faculty of Actuaries in Scotland. Catalogue of the Library. November, 1888. 108 pp., 8vo. Edinburgh	The Faculty
Glasgow Philosophical Society—	
Proceedings, 1887-88. Vol. xix. Plates and diagrams....	The Society
President's Address. "Ticketed Houses" of Glasgow... and on the amelioration of the lives of their occupants. By James B. Russell, M.D. Diagrams, 8vo. 1888	The Author
Hull Incorporated Chamber of Commerce and Shipping. Annual Report of the Council . . . 1888. 8vo.	C. M. Kennedy, Esq., C.B.
Institute of Actuaries. Journal. Part 4 of vol. xxvii. October, 1888	The Institute
Institute of Bankers. Journal. October and November, 1888	,,
Institution of Mechanical Engineers. Proceedings. No. 3. 1888. Plates, 8vo.	The Institution
Joint Stock Companies. Remarks on the Bill in relation to—, introduced into Parliament . . . in 1888, and on Contemplated Legislation in reference to those Corporations. 8vo. 1888	C. M. Kennedy, Esq., C.B.

---

* Foreign and Colonial Societies will be found under the various countries or possessions to which they belong.

Donations—Contd.

Donations.	By whom Presented.
(e) Societies, &c. (British)—*Contd.*	
London Chamber of Commerce. Journal. Nos. 79—82. 1888	The Chamber of Commerce
Manchester Literary and Philosophical Society. Memoirs and Proceedings. Fourth series. Vol. i. Plates. 1888	The Society
Newport (Mon.) Chamber of Commerce. Fourth Annual Report. 8vo. 1888	C. M. Kennedy, Esq., C.B.
Royal Agricultural Society. Journal. Second series. Vol. xxiv, part ii. Plates. 1888	The Society
Royal Geographical Society. Proceedings. September—December, 1888	"
Royal Medical and Chirurgical Society. Medico-Chirurgical Transactions. Vol. 71. Plates. 1888	"
Royal Society. Proceedings. No. 271. 1888	"
Royal United Service Institution. Journal. Vol. xxiii. No. 145. 1888	The Institution
Society of Arts. Journal. (Current numbers.) 1888	The Society
Statistical and Social Inquiry Society of Ireland. Opening Address for the Session 1888-89. By Dr. T. W. Grimshaw. (In slip)	"
Surveyors' Institution. Transactions. Vol. xxi, parts 1—3. 1888	The Institution
University College, London. Calendar for the Session 1888-89	The College

(f) Periodicals, &c. (British).*		
Athenæum, The	Current numbers	The Editor
Bankers' Magazine (London), The	"	"
Building Societies and Land Companies' Gazette, The	"	"
Commercial World, The	"	"
Economist, The	"	"
Fireman, The	"	"
Insurance and Finance Leader, The	"	"
" Post, The	"	"
" Record, The	"	"
" Observer, The	"	"
Investors' Monthly Manual, The	"	"
Iron and Coal Trades' Review, The	"	"
Machinery Market, The	"	"
Nature	"	"
Policy-Holder Journal, The	"	"
Railway Press, The	"	"
Review, The	"	"
Sanitary Record, The	"	"
Shipping World, The	"	"
Statist, The	"	"

---

* Foreign and Colonial Periodicals will be found under the various countries or possessions in which they are issued.

INDEX TO VOL. LI,

YEAR 1888.

PAGE

AGRICULTURE. *Agriculture and Prices in the Seventeenth Century.* [From "The Economist Monthly Trade Supplement" of 10th March, 1888] . . . 649

  Review of work on this subject by Professor J. E. Thorold Rogers . . . 649–54

AMERICAN LITERATURE. See *Books.*

BALFOUR (Dr. T. Graham, F.R.S.). *The Inaugural Address of, as President of the Royal Statistical Society.* Delivered 20th November, 1888 . . . 683

  References to deceased Fellows . . . 683–4
  Proposed to deal with some of the errors which may arise in the use of figures 684–5
  Physique of the people . . . 685
  Inquiry as to physical degeneration . . . 686–7
  Recruiting figures . . . 687
  Chest measurements . . . 688
  Returns as to recruits show that in the six years 1864-69 the proportion rejected was 398·2 per 1,000; in the five years 1870-74 it was 314·6; in the five years 1875-79 it was 289·2; and in the six years 1880-85 it was 299·5 . 689
  Comparison of standards; *table* . . . 690
  Instances of erroneous conclusions drawn from the recruiting returns . 691–2
  Influence of reduction of the period of continuous service in the tropics on home death-rate. . . . 693
  Comparisons with German army . . . 694–5
  Report of select committee of the House of Commons . . . 695
  Application of vital statistics to finance . . . 696–7
  Checks on the pension list . . . 698–9
  Table showing the number of recruits for the army medically inspected in each year from 1864 to 1885 inclusive, and the numbers rejected; exclusive of those returned as "under height," "under chest measurement," "apparent age not in accordance with general order," "marks of punishment or of letters D. or B.C.," and "unfit within first three months of service" . . . 700

 Proceedings:

  Vote of thanks proposed by Mr. R. Giffen and seconded by Dr. Mouat, and carried . . . 701–3

BANKING, Mathematical Theory of (see *Edgeworth*) . . . 113
BANKING. London clearing, and the average amount of promissory notes in circulation in England and Wales, Scotland and Ireland, for 1887 . . . 221
BANK OF ENGLAND—
  weekly returns of the issue and banking departments for 1887 . 222–3
BERLIN, Wages of the Working Classes. See *Wages* . . . 823
BIRTHS. See *Registration.*
BOOKS. *German Literature in* 1886-87 . . . 163

  Comparative table of German publications, 1886-87, from the "Börsenblatt" 163–4

PAGE

Books—*contd.*

English Literature in 1887 164-6

Extract from the "Publishers' Circular," with analytical *table* of books published in 1887, and *table* comparing classification of books published in 1886-87 164-6

American Literature in 1886-87 166

Extract from the "Publishers' Circular," with *table* showing the number of entries made in 1886-87 in the "Publishers' Weekly" 166

Notes on Economical and Statistical Works:

Nicholson (J. Shield). "A Treatise on Money and Essays on Present Monetary Problems" 169
Horton (S. Dana). "The Silver Pound and England's Monetary Policy since the Restoration, together with the History of the Guinea illustrated by contemporary documents" 173
Ward (T. H.). "The Reign of Queen Victoria, a Survey of Fifty Years of Progress" 176
Hitchcock (Dr. E.), assisted by Dr. H. H. Seelye. "The Anthropometric Manual of Amherst College (1861-62—1886-87 inclusive)" . . . 178
Raffalovich (A.). "Le Logement de l'ouvrier et du pauvre" 179
Hauser (Von Dr. E.). "Die Entwickelung der Viehzucht in Preussen von 1816 bis 1888" 181
Ashley (W. J.). "Publications of the American Economic Association. The Early History of the English Woollen Industry" 182
Treasury Department. Wool and Manufactures of Wool. Special Report... Prepared by the Chief of the Bureau of Statistics, Treasury Department. Washington, 1887 183
"Abstract of the Foreign Commerce of Europe, Australasia, Asia, and Africa, 1873-85." No. 1. Prepared from Official Returns, and reduced to American Money, Weights, and Measures. Washington, 1887 184
Wright (Carroll D.). "Hand Labour in Prisons. A Letter in response to an inquiry from His Excellency Oliver Ames, Governor of Massachusetts." Boston, 1887 184
—— "Problems of the Census." Opening address before the American Social Science Association at Saratoga, 5th September, 1887. Boston, 1887 . 185
—— American Economic Association. "The study of Statistics in Colleges. Boston, 1887" 185
Farrer (T. H.). "Observations on the connection between Gold, Credit, and Prices" 398
—— The Quarterly Journal of Economics, vol. ii, Nos. 1—3. Boston . 401
Beauregard (P. V.). "Essai sur la Théorie du Salaire. La Main d'Œuvre et son Prix" 404
Michel (G.). "Vauban—Dîme Royale" 407
Brann (Von Dr. Heinrich). "Archiv für Soziale Gesetzgebung und Statistik. Herausgeben" 410
Graham (W.). "The One-Pound Note in the Rise and Progress of Banking in Scotland, and its adaptability to England" 410
Rawson (Sir R. W.). "Synopsis of the Tariffs and Trade of the British Empire." Prepared and presented to the Commercial Sub-Committee of the Imperial Federation League by the Chairman, Sir Rawson W. Rawson, K.C.M.G., C.B 412
Howard (J.). "Estimate of the Value of farm products sold" . . . 413
Levasseur (E.). "Statistique de la Superficie et de la Population des Contrées de la Terre." Bulletin de l'Institut International de Statistique. 413
Ingram (J. K.). "A History of Political Economy" 654
Sidgwick (H.). "The Principles of Political Economy" 656
Molinari (G. de). "La Morale Économique" 659
McDonnell (W.). "A History and Criticism of the Various Theories of Wages" 661
Salerno (G. R.). "Scienza delle Finanze" 662
Leroy-Beaulieu (Paul). "Précis d'Économie Politique" 663
Final Report of the Royal Commission appointed to inquire into the Recent Changes in the Relative Values of the Precious Metals . . . 827
Smith (Richmond Mayo). 1. "Statistics and Economics." (Vol. iii, Nos. 4 and 5 of the publications of the American Economic Association) . . 835
2. "The National Bureau of Labour and Industrial Depressions." (The "Political Science Quarterly," vol. i, No. 3) 835
3. "Wage Statistics and the next Census of the United States." ("Quarterly Journal of Economics," vol. ii, No. 4) 835
4, 5, 6. "Control of Immigration." ("Political Science Quarterly," vol. iii, Nos. 1—3) 835

Booth (Charles). *Condition and Occupations of the People of East London and Hackney*, 1887 276

I. Introduction: the paper is a continuation of the one in May, 1887, and the system of the paper has been applied to the district of Hackney school board division 276

PAGE

BOOTH (Charles). *Condition, &c., of the People—contd.*

Some of the former *tables* have been revised and altered, and are now repeated with fresh ones relating to East London 277
Replies to criticisms on his division of the people into "poor" and "very poor" . . . 278
The conclusions arrived at are built on three assumptions:—
(1.) That the numbers of married men with school children in each section by employment imply a similar proportion in the same sections of married men without school children, and of other male adults: (2.) That the number of children of school age in each section implies the existence of brothers and sisters, older and younger, to be found living under the same home conditions: (3.) That the condition as to poverty of those with children at school in each section will safely represent the condition of the whole section . . . 279
II. Description of district: the area under consideration, explained with diagram . . . 279–83
III. Sections and classes. The sections by occupation are more detailed than was the case in the Tower Hamlets. The classes are—
  A. The lowest class of occasional labourers, loafers, and semi-criminals . 283
  B. Casual earnings—"very poor" . . . 283
  C. Intermittent earnings } together the "poor" . . . 283
  D. Small regular earnings }
  E. Regular standard earnings—above the line of poverty . . 283
  F. Higher class labour . . . 283
  G. Lower middle class . . . 283
  H. Upper middle class . . . 283
Percentage *table* of classes . . . 284
IV. Division of the population by sections, and working in percentages, *table* 285–7
  Percentages of artizans, *table* . . . 288
V. The classes: Explanation of the numbers and earnings of the several classes, *tables* . . . 288–93
VI. The question of poverty—
Omitting Class A, which rather involves the question of disorder, we have Classes B, C, and D, as containing the true problem of poverty. Some aspects of this problem examined, and the population divided according to age, sex, &c., *table* . . . 293
Distinction between poverty, want, and distress . . . 294
Analysis of causes of "great poverty," *tables* . . . 295–6
Incapacity for work . . . 296
The large proportion of people who are continually short of work, and how they employ their time . . . 297
The relation of unemployed labour to industry . . . 298
Disadvantages of the present plan of distribution of work among the different classes . . . 299
VII.—A comparison of the East End with the rest of London—
  (i). Poverty, *tables* . . . 300–5
  (ii). Industry, *table* of occupations . . . 305–8
Conclusion . . . 309
Appendix A. *Table* of sections and classes—
  1. Shoreditch . . . 310–11
  2. Bethnal Green . . . 312–13
  3. Whitechapel . . . 314–15
  4. St. George's in the East . . . 316–17
  5. Stepney . . . 318–19
  6. Mile End Old Town . . . 320–21
  7. Poplar . . . 322–3
  8. Hackney . . . 324–5
  9. East London . . . 326–7
  10. East London and Hackney . . . 328–9
—— B. *Table* showing the number of acres which have been deducted from each parish as being used for non-residential purposes . . . 330
—— C. *Table* of Metropolitan pauperism . . . 331

Discussion on Mr. Booth's Paper:

Scott (F.)
Had entered upon a similar work at Manchester to that of Mr. Booth . 332

Giffen (R.)
Acknowledged the great value of Mr. Booth's labours . . . 332–3

Rawson (Sir R. W.)
Hoped that the example of Mr. Booth would lead to the extension of inquiries throughout the whole kingdom, so as to bring into prominence the special features of our destitute population; and aid the discovery of some means of elevating them and reducing the distress . . . 333–4

Loch (C. S.)
Said that the problem appeared to be how 83 per cent. of the population could save or help the remaining 17 per cent. If the remedy did not lie in relief, it would seem to lie in the self-helping agencies of practical school education and thrift . . . 334

BOOTH (Charles). *Discussion on his Paper—contd.*

Lakeman (J. K.)

There were many things to which attention might be directed, so that poverty and destitution might be removed 334-5

Lawrence (Rev. F.)

Drew attention to overcrowding in small country villages . . . 335

Carbutt (E. H.)

It was only by discussing these matters, by everybody bringing forward the knowledge he possessed on one particular point, that a solution of the problem could be arrived at He did not believe that charity would be the means of doing away with the evil. What was wanted was that the lower classes should become discontented with their position, and set to work to improve it 335-6

Mathias (J. M.)

Said that the Tower Hamlets received the pauperism of the country and the pauperism from abroad also. As one of the working class he expressed, on behalf of his fellow workmen and himself, his heartfelt thanks to Mr. Booth for his able paper 336-7

Kerrigan (T. E.)

He had been in the very slums of Japan and China, but he could honestly say that for downright outrageous laziness, that of the "loafer" portion of the East End of London exceeded every other part of the globe . 337

Powell (F. S.)

In our present social system there was a firm and solid foundation of good, and the evil was lessening 338

Schloss (D. F.)

Pointed out that we had heard much about those who had failed, but knowledge was wanted about those who had succeeded 338

Hicks (Mrs. A.)

A house to house visitation was made in the north-west district of London, and in sixty streets 1,300 men were found to have been out of employment for at least a month. Each of those men represented a distinct family, which probably averaged six persons, so that there were 7,800 human beings on the verge of starvation 338

Booth (C.), reply:

The paper he had read was a mere skeleton; the flesh and blood had yet to be added. He was thankful to say that he was now getting the co-operation of others in the work, and he hoped that by their assistance a solid value would be given to it 339

BOURNE (S.) *Index Numbers as Illustrating the Progressive Exports of British Produce and Manufactures* 819

A paper read at the Aberdeen Meeting of 1885 endeavoured to show the "Use of Index Numbers in the Investigation of Trade Statistics," and set forth in several forms the comparisons which might thus be made between the exports of 1883 and previous years The publications of the Board of Trade since that date enable similar calculations to be made for the four later years, and it is thought that these figures may be interesting as an addendum to those then produced 819

Table A.—British goods exported in 1887 compared with those of 1883 . 820

—— B.—Exports of British produce and manufactures for the five years ending with 1887, in index numbers on the basis of 1883, viz., 1,000 representing 240 million £, with those numbers as they would have been at the prices of 1883 (the black figures being at 1883 prices) 821

Conclusions and inferences 822-3

BRAMWELL (Lord). *Economic Science and Statistics.* The Address of the President of Section F of the British Association, at Bath, September, 1888 704

Political economy as a science 704-5
Usuary laws 705
Political economy has made the workman a free man 705
Advantages of following right rules 706-7
Precepts of the science 707-8
Socialism 708-9
Parliament and interferences with liberty 710-11
Protection, "fair trade," and population 711-12

BRITISH ASSOCIATION. *Address of the President of Section F—Economic Science and Statistics*, at the Fifty-Eighth Meeting, held at Bath, in September, 1888 (see *Bramwell*) . . 704

PAGE

CANADIAN railway and commercial statistics (see *Colmer*) . . . 74

CANALS. see *Germany* 375

CENSUS (IMPERIAL) of 1891. Report of a committee with reference to the census of 1891, recommending that the census should be taken every five years, and that the Census Act be passed in 1889, and that a census branch of the General Register Office be formed . 816–18

COLMER (J. G.). *Some Canadian Railway and Commercial Statistics* 74

  Rapid extension of railways in Canada owing to State assistance . . 74
  First railway opened in 1837 in Quebec 75
  Subsequent railway progress 75–6
  The position of Canadian railways as investments examined, showing that there are 56½ millions sterling earning dividend out of 58½ millions invested capital 76–7
  The Grand Trunk Railway 77–8
  Railways worked by the Government show a net loss 78–9
  The financial position of Canadian railways on the whole is very satisfactory. The total capital is $653,376,144, but of this $156,904,449 must be deducted as representing State aid, leaving $497,471,704 subscribed by the public 79
  Traffic and working expenses for ten years, *table* 80
  Many hundreds of miles of the railways constructed since 1880 run through districts very thinly inhabited at present, and have not yet made any appreciable effect upon the above returns. The passenger traffic has however increased by more than 50 per cent. since 1877, freight traffic by 130 per cent., earnings by 83 per cent., while the working expenses are only 60 per cent. higher than they were. The proportion of working expenses to receipts in 1877 was 81 per cent., in 1886 it was 72 per cent. . 80
  The position of Manitoba, *table* 81
  Railway construction in the north-west and in British Columbia has aided emigration and united the Dominion both commercially and politically . 81–2
  Commerce has progressed as follows:—1868-71, $145,142,974; 1872-76 $200,914,189; 1877-81, $175,817,472; 1882-86, $209,511,158 . . 82
  The import trade, 1875-85, *table* 83
  Statistics of manufacturing industries, 1871-81, *table* 83
  Development of local industries, 1868-86, *table* 84–5
  The public revenue in the same time has advanced from 16*s.* 8*d.* to 28*s.* 6*d.* per head; and the net public debt from $75,728,641 to $223,174,107. The net interest payable per head has only increased from 5*s.* 4*d.* to 6*s.* 8*d.*, which is owing to the improvement in the national credit 85
  Exports: minerals, fisheries, forest products, animals and their produce, agricultural products, and manufactures 85–9
  Total outside trade of the Dominion amounts to $39·57 per head, divided into imports $21·78 per head, and exports $17·79. This compares very favourably with the United States, whose imports are equal to $10·84 per head, and exports $11·59, the total being $22·43, or in favour of Canada to the extent of $17·14 per head 89
  Canadian Pacific Railway, its origin and construction. 89–90
  Its future from imperial and commercial points of view 91–2
  Canadian canals and shipping interests 93
  The increase in population in Canada and the other colonies, and the consequent growth of commerce and mutual interests, must benefit both the colonies and the mother country, and add to the wealth, strength, and power of the whole Empire. 93
  Appendix. *Table* A. Progress of railway construction in Canada . . 94
  Table B. Railways in Canada in 1867 94
  —— C. Total exports and imports of Canada, 1868-86 95
  —— D. Principal manufactures in Canada in 1881 95
  —— E. Exports of Canada, 1868-86 96
  —— F. Distances to Australia and the East 97
  —— G. Railways in Canada 98–101

Discussion on Mr. Colmer's Paper:

Bernard (W. L.)

  When they considered that the capital sunk in the railways of Great Britain exceeded even the money invested in the national debt of the United Kingdom, it was very remarkable that a young country like Canada, with only 5 millions of population, should have such a vast railway system, and he thought it presaged very great results for the future of that country . 102

Baden-Powell (Sir G., M.P.)

  Dwelt upon the advantages of the Canadian Pacific Railway 103–4

Powell (F. Sharp, M.P.)

  Also referred to the Canadian Pacific Railway, and said that a Frenchman a hundred years ago had said that that was the true road to China, and he called it La Chine rapid; that prophecy was repeated as a joke in 1871, but that which was a jest then was an accomplished fact now, and the railway brought China 1,000 miles nearer Liverpool than any other route . 105–6

PAGE

COLMER (J. G.). *Discussion on his Paper—contd.*

Mosse (J.)

Said that in contrast to the Inter-Colonial Railway, which from first to last occupied some fifty years in cogitation and construction, the expedition practised on the Canadian Pacific Railway was most extraordinary. The works on 1,910 miles of main line were commenced in May, 1881, and completed in December, 1885 106-7

Elliott (T. H.)

He had noticed with especial interest the remarkable extent to which Government interference appeared to be carried in Canada; in almost every direction Government aid was indicated. It would be very interesting to know to what extent they might attribute the Canadian success to this active co-operation and assistance on the part of the Government. There had been great enterprise upon the part of the Canadian Government, and he thought that similar enterprise in other directions might possibly lead to a similar happy result 107

Hendriks (F., Chairman)

Drew attention to some points which he thought required explanation, and spoke of the error of supposing that it ever would be good policy for colonials to be waiting upon Government to help them forward in enterprises which could best be conducted by private energy and capital. Colonials who did not help themselves, but waited for Government initiative, would be nowhere in the modern race of competition . . 108-10

Bourne (S.)

Said that the subject of imports and exports was rather a sore point between Mr. Colmer and himself and they had had many passages of arms with regard to the tariff system. The small quantity of imports and exports arose from the fact that Canada instead of consuming the manufactured produce of England, and sending us food and raw material exercised her capability of producing manufactured goods for herself. Canada would have advanced more rapidly had she not fallen into the error of the protective system 110-11

Colmer (J.G.), reply:

With regard to the remarks of Mr. Stephen Bourne upon the tariff, he might mention that in Canada there was a practical unanimity of opinion with regard to the fiscal policy. At the recent general election both parties were united in regard to it, and both supported it. Mr. Stephen Bourne would admit that the country had made very rapid progress, notwithstanding the disadvantages under which he considered it had laboured, and that its condition was not unsatisfactory 111-12

COMMERCE. *Financial and Commercial History of* 1887 [from the supplement to the "Statist," 11th February, 1888] 127
- No distinct signs of better business till the close of 1887 127
- "Corners" in tin and copper 127-8
- Export trade improved 128
- Import trade not unsatisfactory 128-9
- Home railway traffic 129
- Agriculture at home and abroad 129-30
- Cotton trade 130-31
- Woollen trade 131-2
- Iron and metal trades 132-3
- Money market and prices 133-4

COMMODITIES. Prices of in 1886-87 (see *Sauerbeck*) 154

CO-OPERATORS, progress, organisation, and aims of (see *Jones*) . 33

CORN. *Gazette* average prices, 1887, with summary of 1886 added for comparison 218-19

CORNISH MINES, Work and Wages in (see *Price*) 497

CRAIGIE (Major P. G.). *The English Poor Rate: some Recent Statistics of its Administration and Pressure* 450
- Reasons for calling attention to the influences which affect the distribution and pressure of the English poor rate 450-51
- References to earlier poor law statistics of Purdy, Lumley, and Palgrave . 451
- Relief only and not the nominal poor rate is the subject treated of . . 452
- The Poor Law Act of 1834, the previous and subsequent administration, and the geographical distribution of the charge for poor relief . . . 453-4
- Cost of relief and ratio of paupers to population; *table* and diagram for thirty years 454-5
- Pauper censuses show that on six occasions only since 1858, in the two years 1863-64, and in the four consecutive years 1868-71, has the round number of 1 million paupers been found in receipt of relief on any new year's day . 455
- Actual pauperism and relief disbursed, 1857-87; *table* 455-6
- Examination of the changes in items of relief 456-7

Craigie (Major P. G.). *The English Poor Rate—contd.*

Movements of the amount of in-door and out-door pauperism . . 458
Table of paupers in receipt of relief at three dates 459
—— showing increase or decrease in total paupers in divisions . . 460
—— showing increase and decrease of paupers, distinguishing those relieved in-door and out-door, in three intervals 460
Results of the comparison of the returns of pauperism for different periods . 460–61
Inquiry as to districts where pauperism has been abated or increased, *tables*. 461–3
Classification of paupers at different dates, *tables* 464
Causes which led to pauperism of the out-door paupers, *tables* . . 465–6
Pauperism in urban and rural counties contrasted; *tables* showing the counties grouped so as to show the most "densely peopled," the least "landed," the least "agriculturally occupied," and the most "urban" districts, and the counties at the other end of the scale in each of those particulars 467–9
Examination of the results of figures thus compared, and statement of the cases in which pauperism increased or diminished, *tables* . . . 470–72
Reforms in particular unions, *tables* 472–6
Conclusions. (1). That a large portion of the pauperism of this country is a preventible pauperism, since under conditions precisely parallel the disease, whether we regard it as hereditary or contagious. has shown itself susceptible to treatment, and to great and comprehensive restriction 476–7
(2). That this being so, it is impossible to regard the numerical record either of pauperism of all sorts, or of relief, as absolutely conclusive evidence either of the progression or retrogression of the nation, or of the relative abundance or distress of particular districts 476–7
Appendix. *Table* I. Expenditure on poor relief per head of population . 478–9
Table II. Proportion per cent. of certain items to total relief in poor law divisions, year ended Lady-day, 1858 1868 and 1887 . . . 480
—— III. Counties in order of different characteristics . . . 481
—— IV. In-door paupers in rural unions 482
—— IVA. Out-door paupers in rural unions. 482
—— V. Unions where the pauperism cost over 10s per head in 1870, showing reduction in pauperism and cost per head in 1884 . . . 483–5

Discussion on Major P. G. Craigie's Paper:

Chadwick (Edwin, C.B.)

He regarded the paper as superior to any—unless it be very recent—reports of the Local Government Board in which such discrimination ought to be displayed. He thought that out-door relief in money often went to the payment of the rents of the bad tenements of the administrators; or to be spent in their shops, or even yet in aid of wages, or in ways baneful to the interests of the wage classes 487–8

Leighton (S., M.P.)

Gave some statistics of an agricultural union with which he was intimately acquainted, the Atcham Union, in illustration and support of the paper. He thought his figures would confirm the statement that the strict regulation of out-door relief did not "force people into the house." That assertion, often repeated, was not supported by facts, and was contradicted by figures 488–90

Harris (W. J.)

Said that in the early part of this century a most pernicious system came into vogue for relief to be given simply in lieu of wages, but of late years that system had been almost entirely departed from. He hoped, however, that the practice would not now go too far in the direction of refusing all out-door relief in cases of hardship 490–91

Kennedy (C. M.)

Agreed generally with the conclusions of the paper, though he held that the increase of trade since 1831, and the development of the use of coal and iron, had much to do with the diminution of pauperism . . . 491

Fletcher (J.)

Stated his experience as chairman of a board of guardians as to out relief . 491

Rawson (Sir R. W.)

When the question of the management of the poor was likely to come before the legislature, he hoped that the facts contained in Major Craigie's paper would afford a valuable guide to the future administrators of the poor law, and be productive of some relief of the burdens of the ratepayers . 491–2

Balfour (Dr. T. G., Chairman)

Referred to the reduction in the number of wives of soldiers and sailors who received out-door relief 492

Bourne (S.)

Major Craigie had plainly proved that it was possible to lessen the contributions for the maintenance of the poor, but he had not proved that such

PAGE

Craigie (Major P. G.). *Discussion on his Paper—contd.*

Bourne (S.)—*contd.*

reduction was not concurrent with an alteration in the circumstances of the poor themselves 492

Craigie (Major), reply:

Regretted that none of the party of reaction, who advocated a recurrence to a less strict system of poor law administration, on the ground that it was more popular, had put in an appearance that evening. Scarcely any of the speakers had impugned the general conclusions of the paper . . 492–3

Danvers (Sir Juland, K.C.S.I.). *Defects of English Railway Statistics* 1

Object of paper is to induce railway companies to improve their statistical returns 1

Cost of service is an essential factor in solving the problem how a railway can be most economically and efficiently worked, and this cannot be ascertained without carefully recorded statistics, showing not merely how many passengers are booked and how many tons of goods are lifted, but the distances they are transported. Such data are not available for any railway in the United Kingdom 2–3

Average receipts and expenses per passenger and per ton of goods per mile are shown in Indian, colonial, continental, and American returns . . 3

Board of Trade reports lament the absence of this information from British returns 4

Opinions of English and other statists 5

Objections on the part of English railway managers are: (1) that it is difficult if not impossible to obtain the information with sufficient accuracy; and (2) that if obtained it would be of no practical use . . . 5

Objections of Mr. Grierson in "Railway Rates, English and Foreign," examined 5–6

Transport regarded as a purchasable commodity, and its exchange value must depend upon the cost of production 6–7

Tables showing the cost of carrying a ton and a passenger one mile, and the receipts from each on several Indian railways 8–9

Economies on Indian railways are due to increase of train loads and reduction of train mileage 10

Those who propose the cost of service should be shown, admit the approximation only is possible 11

Examination of contention that the various modes of attempting to attain the nearest approximation to absolute correctness, prove the difficulty of obtaining the desired unit cost in this country 11–12

Conclusion suggested that knowledge of what the cost is should, as regards railways, prevent undue competition, should assist in the judicious application of rates to different classes of goods and passengers, and enable useful comparisons to be made between different railways for the mutual benefit of each 12

Comparison of the results of different lines, and instances showing how returns giving cost of service resulted in economies, *table* 12–15

In any future railway Bill powers should be given to the Board of Trade to call upon the railway companies of this country to render such statistical returns as may be considered desirable in the public interests . . 16

General results of working Indian railways, *table* 16

Appendix. Forms of returns of traffic and mileage 17–21

Discussion on Sir Juland Danvers's Paper:

Baden-Powell (G., M.P.)

Hoped that the paper would rouse the public, whether interested as consumers or shareholders in railways, to provide Parliament with that amount of information which was absolutely essential to proper legislation 22

Haig (C. R.)

Thought that if what was proposed by the author would lead to the publication by the railways of statistics which would enable them to judge what was charged for the foreign goods, it would no doubt lead to a better state of things with regard to those matters 22

Price-Williams (R.)

He entirely endorsed the views of the author of the paper, and he had been endeavouring to enforce them as much in the interest of the railway companies as of the public, by trying to induce the leading railway authorities to furnish the data in their half-yearly reports. He explained that he had himself prepared analyses relating to the London and North Western and Great Northern Railways 22–7

Carbutt (E. H.)

Trusted that better data would be forthcoming, but gave reasons why rates are high in England 27

PAGE

DANVERS (Sir Juland, K.C.S.I.). *Discussion on his Paper—contd.*

Williams (Major-General, E.C.S.)

Thought that great care was needed in applying the average *tables* What is required is to know what the amount of work done is, and what it costs to do that work 27-9

Oakley (H.)

Thought that anyone who expected to attain any very marked result in English railways by working out the principle of a ton-mile unit or passenger-mile unit, would be very much mistaken, because no average could be applied to the trade of this country. Owing to the conformation of certain parts of the country an engine could only carry 10 or 15 wagons, whereas in flat districts such as Lincolnshire a train might consist of as many as 45 wagons. If they took the ton-mile on each individual section of the line, and saw what was earned, some reasonable approximation might be arrived at, but practically for every district there would be a varying ton-mile 29-30

Kimber (E.)

The great merit of the paper, with the calculations, was that it would enable them to know what to avoid, both here and in India 30-31

Tennant (H.)

Greatly admired the paper from the standpoint of the author, but it was important to remember how exceedingly difficult it was to compare two things which were not alike; and the railway systems in India and in Great Britain were about as unlike as any two things could well be . . 31-2

Danvers (Sir Juland), reply:

He had not been convinced that it would be impossible to arrive at an average which would be of practical use to the railways of this country. Such an average would of course be considered intelligently and in connection with the circumstances of each case, and not taken as arbitrarily fixing a unit upon which the rates should depend. The managers connected with Indian and American railways had acknowledged the value of the information in question, and admitted that they had been influenced by it in their decision as to the rates 32

DEATHS. See *Registration.*

DISCOVERIES and inventions, awards for meritorious 826

Notice of the power of the Committee on Science and the Arts of the Franklin Institute, of the State of Pennsylvania, U.S.A., to award, or to recommend the award of, certain medals for meritorious discoveries and inventions which tend to the progress of the arts and manufactures . 826-7

EDGEWORTH (F. Y.). *The Mathematical Theory of Banking* . 113

Applicability of the law of error or probability curve to banking business . 113

Its direct application illustrated, to determine the probability that the notes in the hands of the public will not in the proximate future fall below a certain limit 117

To determine the probability that the drain upon the reserve will not exceed a certain limit 122

The indirect application of the theory to correct certain unwarranted presumptions—

(1.) That the observed maximum or minimum value of a banking variable, such as notes in the hands of the public, constitute a safe superior or inferior limit 123

(2.) That the extent of the demand which the reserve has to provide against, tends to increase proportionately to the liabilities, other things being the same 124

EDGEWORTH (F. Y.). *Some New Methods of Measuring Variation in General Prices* 346

The variation of prices here measured is not that which is defined by the special interest of consumers 347

Or of producers 348

But more objective, adapted to the general purposes of science . . 348

I. Preliminary view of the phenomena under measurement . . . 348

Variation of general prices implies *primâ facie* a sporadic dispersion of change 349

Variation in prices cannot express change in the quantity of gold (relative to its work), unless we take an average extending over several years . . 350

But in a period of years there will have occurred progressive or *secular* variations of 'other things;' which kind of variations can neither be averaged away, nor allowed for 350

PAGE

EDGEWORTH (F. Y.). *Variation in General Prices—contd.*

II. Divisions and description of the problem 351
(1.) To ascertain a mean variation of general prices as a mere fact, it is not necessary to show a fall (or rise) in each article 352
Nor that we should be unable to assign special reasons accounting for each particular variation 353
There is only one postulate 354
Which is fairly well fulfilled 355
(2.) To ascertain variation of prices as the measure of the change in the quantity of gold (relatively to the work it has to do), there are two sets of operations necessary: to allow for the change in the volume of transactions, and the *secular* variation in the organisation of credit and the rapidity of circulation, to solve the statistical problem to which by these corrections the investigation is reduced 355
III. Determination of the proper species of average 356
(1) The general presumption in favour of the arithmetic mean may be overridden by the tendency of prices to rise extravagantly . . 356
The remedies are (*a*) the geometric mean; which is not sufficiently drastic . 356
(*β*) Modes of smoothing the given groups of observations into a sweeping curve; which methods are open to objections 357
(*γ*) The median; which species of average without manipulation secures that particular high prices, like *cotton* and *tobacco* in 1862-65, should not unduly impress their individuality on the general result . . . 360
The median is specially adapted to three sorts of grouping . . . 362
Which seem to be actually presented by the statistics of prices . . 362
Methods of weighting the median 363
(2.) The average proper to the problem in its second phase is the weighted mean of the kind employed by Mr. Palgrave 365
The *weights* should be proportional to the total value of each article; with a correction, if possible, for the circumstance that transactions of different natures put in use different quantities of currency (to the same volume of trade) 366
How far sporadic dispersion of change is essential to the solution . . 367

EDGEWORTH (F. Y.). *The Statistics of Examinations.* [Read before Section F of the British Association at Bath, in September, 1888]. 599

Existence and nature of error. 600
Error incident to an aggregate of inaccurate items 600
Estimate of the error incident to the aggregate of marks according to which the candidates at a typical public examination are arranged . . 600
A. Error in appreciating the work done at the examination . . . 602
I. Uncertainty due to the existence of a *minimum sensibile* in our perception of degrees of merit 603
II. Deviations caused by the idiosyncrasies of examiners . . . 603
  1. Variations in the importance assigned to each question . . 605
  2. Variations in the scale of each subject 606
    (1.) Directly affecting the absolute number of marks . . 607
    (2.) Indirectly affecting the relative position of the candidates 607
III. Errors caused by the negligence of examiners 609
  1. In marking each answer 609
  2. In the scale according to which any particular paper is marked . 610
B. Error incurred in taking the work done at the examination as evidence of candidate's proficiency 611
Total error resulting from all causes 612
Amount of displacement due to error; number of candidates who may have been placed in a wrong class 615
Recommendations based on statistical grounds 616
I. The arrangement of honour lists should be alphabetical . . . 616
II. The work of assistant examiners should be alleviated . . . 617
  (1.) A preliminary arrangement based on a complete examination of *half* the answers might be sufficient for the purpose of a pass examination 617
  (2.) The increase of the number of examiners not so objectionable as supposed 619
III. It might be possible to elevate, or depress, the results of examiners who have adopted different scales 619
IV. The standard should be based on the average, rather than the best, answering 620
V. Upon a certain hypothesis the theoretically preferable method of combining marks may be to take their *geometrical mean*, not their sum . 620
VI. Query whether honours and offices might not be better distributed by an admixture of *sortition* than by mere examination . . . 626
Appendix, containing illustrations of theorems in probabilities . . 627-33

ELLIS (A.). *The Quantitation of Stock Exchange Values* . . 567

I. Introduction 567
Explanation of the use of the term "quantitation" 567

PAGE

Ellis (A.). *The Quantitation of Stock Exchange Values—contd.*

The object of the paper has been to compare prices of stock exchange securities at different periods, and to make up something like the "Index Numbers" of the "Economist" 567
Market values of different securities, summary *table* 568
II. Comparison by percentages 569
The quantitative value of securities and of wholesale prices of commodities, *table* 569
Course taken by values of securities examined in groups: (1.) Railroads, coal and iron, commercial, banks, shipping, tramways, insurance, gas, waterworks 570–72
(2.) Stocks having fixed rates of interest: colonial Government stocks, debentures, foreign Government stocks 573
III. Joint stock property held in the United Kingdom: The nominal quantities of stocks and shares taken for comparison happens to agree very closely with what can be picked out from Mr. Giffen's well known statistics of the accumulation of capital in the United Kingdom; variations of par values; *tables* 573–5
Foreign influences on prices 575–6
IV. Causes of the movement of prices 576–7
V. Income has not risen with market values: The quantity of stocks marketable in London, and of international stocks marketable indifferently in London and on the continent, appears to have diminished in comparison with the much greater increase in the resources available for new loans . 577
Conclusion: That there have been quite enough new securities, and that we do not want any more of the speculative kind; that it is better to accept a reduced rate of interest on the investments that we have made, than to encourage the reckless competition of new railways and new lands with those which are already acting 578
Appendix A. Statement showing the nominal value of the different securities quoted in the "Official List," classified under each head, and the total amount of authorised and actual capital which was represented therein on the 31st December, 1881-88 579–82
—— B. Securities and amounts valued 582–9

Discussion on Mr. A. Ellis's Paper:

Hendriks (F.)
Was inclined to the conclusion that the increase of over 25 per cent., which had arisen in the stock exchange market prices of the past ten years, 1877-87, so far as regards debenture stocks of English railway and other first class securities, had remarkably well illustrated what seemed a natural deduction from the principles of political economy, namely, that the present value of a perpetual or fixed rate of interest for money would increase in the inverse ratio of a fall in the price of commodities, or would decrease in the inverse ratio of a rise thereof 590–92

Paul (H. Moncrieff)
While complimenting the author on the research displayed in his interesting paper, could not accept all the conclusions at which he had arrived . 592–3

Hamilton (R.)
Referred to the importance of "Sinking Funds" 593

Glover (J.)
Shared the feeling of the meeting in saying they were under great obligation to the author, but at the same time thought they would best appreciate his labours if they were contented to accept the conclusions of his figures as indications and nothing more 593–4

Begg (F. F.)
Said, as a member of the Stock Exchange, he should be very glad if a check was given by anything that was said in the paper to speculative transactions, such as those which had been so much talked about recently, and which were a prostitution of the institution rather than an exercise of its proper functions 594–5

Elliott (T. H.)
Although he very much agreed with the author's general conclusions, he differed from him in some degree as to the reasons which led to those conclusions, and as to the facts on which they were based 595

Rawson (Sir R. W.)
Suggested that the author should supplement his paper by separating into distinct categories the securities yielding a fixed dividend and those that yielded a fluctuating dividend. He thought also that items that were so large as really to overwhelm the others should be shown separately . 595–6

Matthews (J. E.)
Dealt with foreign loans 596

PAGE

ELLIS (A.). *Discussion on his Paper—contd.*

Giffen (R., Chairman)

Considering that the subject was comparatively new, a great deal ought to be allowed to a paper of this sort, whatever its defects might be, because it brought the subject before the public for the first time, and started a form of inquiry which might grow to be very useful. With regard to the relation between the rise in the price of securities and the fall in the price of commodities, the proper comparison was between the yield of the securities and the prices of commodities. They would often find in many states of the money market, at least when the price of securities rose, as indicated by the number of years' purchase, that there was a fall in the price of commodities. Still that was not the way in which, to the best of his recollection, he had used the word in dealing with the question to which the author had referred. What he believed he had pointed out was, that it was important always to recognise that relatively a rise of securities, if commodities did not change in value, of itself meant a relative fall in the value of commodities; that was as between the securities and commodities, and that was a fact which should always be remembered 596–8

Ellis (A.), reply:

Acknowledged the usefulness of the discussion, and promised at a future time to amend his paper by adding fresh matter 598

EMIGRATION. *Emigration and Immigration from and into the United Kingdom in* 1887 [report by R. Giffen on the Statistical Tables] 402

Increase of emigration of previous year has continued 368–9
Comparison of emigration and immigration figures for 1885-87, *table* . . 369
Number of British and Irish emigrants in 1887 largest yet reached except 1883 369
Proportion of the emigrants to population in 1887 was 0·76 per cent. . . 369
Numbers of cabin and steerage passengers leaving the United Kingdom for places out of Europe in each of the years 1876-87 370
Emigration to the United States 370–71
Immigration in 1885-87, *tables* 371
The net emigration proper was composed of 93,628 adult males, 64,628 adult females, and 37,756 children 372
Destination of emigrants, *tables* 372–4
Emigrants rejected by United States in 1886-87 on ground that they were likely to become a public charge, *table* 374–5

ENGLISH LITERATURE. See *Books.*
EXAMINATIONS, Statistics of (see *Edgeworth*) 600
EXCHANGES, Foreign, for 1887 224
EXPORTS, United Kingdom. *Tables* of merchandise, 1882-87 . . 212–15
table of gold and silver, 1885-87 217

FINANCIAL AND COMMERCIAL HISTORY of 1887. See *Commerce* . 127
FIRES. *The Fires in London during the Year* 1887, *and the Metropolitan Fire Brigade* [from Captain Shaw's Report for 1887] . 136

Number of calls for fires, and of fires during the year, with *table* distinguishing serious from slight in each year 1867-87, and lives lost and endangered 136–7
Number of journeys, water used 137
Strength of the brigade, telephonic communication, number of watches . 138
Table of number of fires, 1884-87, classified according to occupations . 139
—— of number of fires, classified under causes assigned, and *table* showing numbers on each day of the week, 1878-87 140

FOVILLE, (M. de). Letter addressed to, by Mr. M. G. Mulhall. . 162

GERMAN LITERATURE. See *Books.*
GERMANY. *Relative Advantages of the Railways and Waterways of.* [Translated from the "Bulletin du Ministère des Travaux Publics," November, 1887] 375

Quotation from publication by M. Todt, of Cologne 375–6
Estimate of the quantity of goods carried over the German navigable ways in 1884. Basin of East Prussia, Niemen, Vistula, Pregel, and Passarge, 2,227,000 tons; basin of the Oder, 861,000; basin of the Elbe, 7,767,000; basin of the Weser, 218,000; basin of the Ems, 176,000; basin of the Rhine, 7,565,000; Lake of Constance, 338,000, and the Danube, 210,000 tons, making in all, including the small coasting trade of Frisches and Curisches Hoff, a total of 19,362,000 tons 376

PAGE

Germany. *Advantages of the Railways and Waterways—contd.*

The traffic on the navigable streams of North Germany is of very much greater importance than that of South Germany 377
Weight of goods carried amounts to 16,500,000 tons for North Germany, and 3,000,000 for South Germany. If we compare East and West Germany, it will be found that the former has the predominance 378
German river and canal fleet in 1883, *table* 379
Distribution of steamers employed in transport work, *table* . . . 380
Nature of the goods carried, *tables* 381
Traffic on German railways, *tables* 382–3
Comparison of rail and water transport, *table* 384–5
Character of goods carried by water especially in bales 386
The increasingly important part taken by German navigable ways in the transport of merchandise is due partly to the action of the State, and partly to the natural causes of expansion. The action of the State has been manifested in two ways: by the execution of improvement in the water ways, and by the erection of ports and quays at the most important points 386
Employment of steam in river and canal navigation, and its advantages . 387–8
River and canal navigation offer three methods of transport with different rates, as follows: (1) transport by steam carriers, (2) transport in barges towed by steam, and (3) transport by sailing ships 389–90
The necessity which almost invariably exists for the conveyance of the goods for a certain distance over rail or road prejudicially affects the cheapness of water transport 391
Effects of the cost of transport 392
If we consider the movement of goods carried in one direction or another on the Rhine, Elbe, or Oder, it is difficult to come to any other conclusion than that the traffic of these navigable ways owes a part of its success to circumstances absolutely opposed to the general policy in the matter of exchanges 393
Imports and exports of coal and coke during the year 1884 by water and by rail, *table* 394
Advantages to be expected from the establishment of waterways . . 395
Public opinion in its infatuation for canals and improvements of natural waterways, does not take sufficiently into account the true influence that navigable ways may exercise upon the economic condition of the country. The happy effects that one has a right to expect from the opening of these ways upon the development of public prosperity are frequently nullified by the obstacles placed in the way of the production of certain basins. It may be laid down as a general rule that it is rather importation than exportation that is benefited 396

Giffen (R., LL.D.). *Recent Changes in Prices and Incomes compared* 713

Preliminary: reference to his paper in 1879 on "The Fall of Prices and Commodities since 1873" 713
Explanations and definitions 714–15
Consideration of the signs of appreciation or depreciation in an advancing community as distinguished from a stationary community 716–17
Purchasing power of money 718–19
The appreciation of gold: reference to former papers, and inquiry whether the suggestion there thrown out has since been confirmed by the facts, and in what sense there has been appreciation of gold in recent years. *Tables* . 719–27
The degree and character of appreciation: the rise in the purchasing power of gold measured by commodities being established, it remains for consideration to which of the types described in our preliminary remarks this appreciation belongs; and whether it is an appreciation in which the income per head of the community, and the earnings per head of the wage earners, diminish: an appreciation in which the aggregate income of the whole community diminishes, or a case where incomes remain stationary although commodities fall 727–40
The appreciation or depreciation of silver; the appreciation of gold measured by average commodities being established, and the appreciation being of a type in which, as the communities affected are advancing at the same time in material wealth, there is no diminution, or at any rate no great diminution, of average incomes the similar facts respecting silver to be inquired into 740–45
Characters of appreciation and depreciation at different periods: Australian and Californian gold discoveries and earlier dates 745–9
The causes of appreciation and depreciation: difficulty of the inquiry, changes in the movement of money, dynamic equilibrium, *tables* . . 749–58
The redistribution of wealth: consequences of the appreciation of money dealt with in their social and other effects 758–62
The future course of prices, *table* 762–7
Table A. Prices of leading wholesale commodities in January, 1873, 1879, 1883, and 1885, and December, 1888, compared 721
—— B. Comparison of the index numbers of the "Economist," Mr. Sauerbeck, Board of Trade import and export prices, Dr. Soetbeer, and an American index number 722

Giffen (R., LL.D.). *Prices and Incomes compared—contd.*

Table C. Average imports per head and total imports and exports per head of the population of the United Kingdom in the undermentioned quinquennial periods; also showing percentage increase or decreases . . . 725
—— D. Statement of gross amount of profits assessed to income tax per head in undermentioned quinquennial periods 726
—— E. Comparison of wages rates published in the second report of the labour correspondence of the Board of Trade on trades unions . . 731
—— F. Wages in Lancashire mills given by Mr. Lord, President of the Manchester Chamber of Commerce 733
—— G. Summary of tables showing increase of wages given in several trades in Lancashire, given in by Mr. Lord, President of the Manchester Chamber of Commerce 734
—— H. Record of wages paid at the Newcastle Chemical Works from 1840 to end of 1885 735
—— I. Earnings of coal hewers in Durham 736
—— K. Rate of money wages of ordinary agricultural labourers, 1870-71, and 1880-81. Statement of Mr. S. B. L. Druce 737
Appendix A. Extracts from replies to circulars issued by the Royal Commission on Trade Depression as to the rate of wages 768
—— B Germany: Building wages; expense of living; wages of railway employés, &c. 800
—— C. Wages in cotton spinning and cotton weaving in Belgium . . 802
—— D. Mining wages in Belgium 803
—— E. Averages of price of flour; workmen's wages in Belgium, &c. . 803
—— F. Wages in Italy 804

Discussion on Mr. R. Giffen's Paper:

Foxwell (Professor H. S.)

Hoped that the question of the meaning of the word "appreciation" would henceforward be regarded as settled. The expression had always been used by scientific men in a definite sense. It was intended to indicate a rise in the purchasing power of money as expressed in terms of certain selected representative commodities 806-8

Horton (S. Dana)

Thought the paper a most important one 808

Marshall (Professor A.)

Agreed with what was said in it about the use of the word "appreciation." When we were speaking of the appreciation or depreciation of gold or silver we must always make it clear what were the things in terms of which the appreciation or depreciation was measured. When the term "appreciation of gold" is used alone it should, as Mr. Giffen says, be taken to mean a rise in the general purchasing power of gold, whatever be the causes to which that rise happens to be due. And consistency requires that the same interpretation should be given to the term "appreciation of silver" 808-9

Edgeworth (Professor F. Y.)

Wished to endorse Mr. Giffen's statement that in calculating an index number to express a variation in general prices, it was not likely to make much difference what importance was attached to the different commodities whose changes of price formed the data 809

Bourne (S.)

Failed to see any proof at all that they were suffering from a deficiency of gold. There had been a vast increase in the means of transacting the business of the world without the intervention of currency. Mercantile transactions were now carried on by means of paper and promises to pay, which were transferred from one to another 810

Sauerbeck (A.)

Did not think that index numbers could ever give complete accuracy, but they could give an approach to correctness being checked—as in the case of his own numbers—by quantities on two different systems . . 811

Craigie (Major P. G.)

Thought that wages had not fallen as much as prices 811

Garnett (F. B., C.B., Chairman)

Was sure whatever difference of opinion existed with regard to other matters, there would be none with regard to the thanks that were due to Mr. Giffen for his most interesting and able paper 811-13

Giffen (R.), reply:

Dealt with allegations and criticisms 813-15

PAGE

IMMIGRATION into United Kingdom. See *Emigration*.

IMPORTS, United Kingdom. *Tables* of merchandise, 1883-87 . . 214
  table of gold and silver, 1885-87 217

INAUGURAL Address of the President of the Society (Dr. T. Graham Balfour, F.R.S.) 683

INCOMES. *Distribution of, in Germany*. [Translated from the "Bulletin de Statistique et de Legislation Comparée," January, 1888.] (A summary of a report upon the material wellbeing of Germany, addressed by Dr. Engel, late Director of the Prussian Statistical Bureau, to the Society of Political Economy at Berlin) . 158

- Proportional distribution of incomes and mean income per taxpayer and per inhabitant in Prussia in 1872, 1878, and 1884-85, *tables* . . . 158
- Ditto, in Saxony, 1879 and 1884, *tables* 158–9
- Classification of incomes 159
- Proportion of cost of bodily requirements to actual incomes, *table* . . 160
- Distribution of income in Prussia and the empire, *tables* . . . 160–61

INCOMES. *Statistics of, in Prussia, Saxony, and the United Kingdom*. [Translated from the "Bulletin de Statistique et de Legislation Comparée," May, 1888] 635

- The general system of the taxation of incomes which is applied in Prussia, Saxony, and the United Kingdom furnishes the necessary basis for an estimate of the progress of wealth, and by comparing the estimates of private fortunes in these countries we are enabled to form an approximate idea of their respective wealth 635
- Population and incomes, *tables* 636
- From an examination of the *tables* in the United Kingdom the mean income per head of the population amounted to 35*l* in 1875, and in 1886 to 34*l* only 637
- Persons assessable to income tax in United Kingdom, Prussia, and Saxony . 637–8
- The total incomes of the Prussian population amounted to 392 millions sterling in 1876, and 444 millions at the end of 1886, an increase of only 13 per cent. 639
- Small incomes, increase of, *tables* 639–40
- Mr. Goschen's statement as to incomes from 150*l*. to 500*l*. 640
- Statements as to the distribution of the Prussian population as regards the taxation of incomes and classes (*Einkommensteuer Klassensteuer*), *tables* . 641–2
- Soetbeer's estimates of the incomes of the Prussian people, *tables* . . 642–3
- Prussian savings banks, *table* 644
- Life assurances, *table* 644
- Incomes in Saxony, their progress and distribution, *tables* . . . 644–7
- Life assurance and savings banks in Saxony 647
- United Kingdom: estimate of property and profits assessed to income tax, *tables* 647–9

INCOMES and Prices, recent changes in (see *Giffen*) . . . 713

INDEX Numbers (see *Bourne*) 819

INVENTIONS, Awards for meritorious. See *Discoveries* . . . 826

JONES (B.). *Progress, Organisation, and Aims of Working Class Co-operators* 33

- The position of co-operative societies at the end of 1886, shown in a *table* . 33
- I. Retail distributive societies: Their progress has been irregular, and there are great differences in the proportions of shares, sales, and profits to the number or members 34
- Retail societies, grouped according to the amounts of their trade, and according to the localities in which they are situated, *table* . . 35
- In sorting societies those trades that are easiest to manage and require the support of a comparatively small number of people are first engaged in, and the business is afterwards extended 35–6
- Extent to which "domestic production" (*i.e.*, boot and shoe making, tailoring, dressmaking, baking, &c.) is carried on by retail distributive societies . 36–7
- Corn-milling, farming, &c. 37
- II. Wholesale distributive societies: There are only two co-operative wholesale societies 38
- Their growth and management explained, *tables* 39–40
- III. Co-operative productive societies: There were 66 in 1886 . . 40
- List of 224 co-operative productive societies registered and become extinct between 1850 and 1880 41
- Progress made in 1876-86, *tables* 42
- IV. Land and building societies: Under the Industrial Societies Act there were, in 1885, sixty-nine land and building societies, and advances of which no complete details are given are made by the distributive societies . 43

PAGE

JONES (B.). *Aims, &c., of Working Class Co-operators—contd.*

V. Penny banks: There were in 1884 154 societies which had joined these banks. The deposits for the year were 60,000*l.*; the withdrawals 15,000*l.*, and the total deposits 108,000*l.* There were 88,626 depositors . . 43
Progress from 1859 to 1884, *table* 44
VI. Educational work: Of late years there has been a gradually growing conviction in the minds of co-operators that the best use to make of their educational funds is to disseminate as widely as possible among their members an accurate knowledge of economics 44
Work done by these societies, scholarships, lectures, newspapers, tracts, &c. . 45-6
General growth of co-operative societies, 1862-85, *tables* 46-7
VII. Organisation: Explanation of the mode of forming and carrying on societies and of the relations of other societies to the "wholesale" productive societies comprise three groups: (1) those formed in the interests of consumers, (2) those formed by consumers and workers combined, and (3) those formed in the interests of workers only 48
The "Co-operative Union," its constitution, membership, and sections . 49-50
VIII. Aims: The oldest society dates from 1777, the next from 1795, and though there are at present 37 societies older than the Rochdale one, the present co-operative movement is usually dated from the birth of the Rochdale Pioneers' Society in 1844 50
Statutory protection was first given by the Friendly Societies' Act, and other Acts followed 51
Co-operators agree that some people get too great a proportion of this world's goods, while millions get too little; and they hope by means of co-operation to remove most of the inequities, although they never expect to remove all the inequalities Briefly, they believe that by becoming possessors of capital and combining together in using it, they can reduce the interest or remuneration to be paid to capitalists to a very small figure, much below what they have hitherto received 52-3
Appendix: *Table* I. Showing the progress of those co-operative retail societies whose sales in 1886 exceeded 100,000 54-5
Table II. Showing the number of co-operative retail societies that have branch stores, and the numbers possessed by them 56
—— III. Showing the co-operative retail societies that have taken up land for agricultural purposes 56
—— IV. Showing the principal events in connection with the Co-operative Wholesale Society, Limited, since its commencement 57
—— V. Showing the progress of the co-operative wholesale societies from 1864 to 1886 58-9
—— VI. Showing the position of 60 co-operative productive societies in 1886 60-61
—— VII. Showing the principal events in connection with the Scottish Co-operative Society, Limited, since its commencement 62
—— VIII. Showing the progress of the Scottish Co-operative Wholesale Society, Limited, from its commencement in September, 1868, to December, 1886 62
—— IX. Showing the position of 41 co-operative societies in 1876 . . 63

Discussion on Mr. Jones's Paper:

Neale (E. V.)

Pointed out that the paper had no reference to the present Industrial and Provident Societies Act passed in 1876 to consolidate and amend the law relating to these societies, which gave them all the advantages for carrying on their business enjoyed by the more wealthy associations formed under the Joint Stock Companies Act, including the power of holding land to an unlimited extent 64

Holyoake (G. J.)

In co-operation there were strata of opinion as there were in the geological world. He belonged to the old red sandstone formation. He was with co-operation when it began, and observed the process of its evolution from Owenite societies. He thought that the causes of poverty were as well known as the causes of disease, and might be as certainly prevented. If only half of the millions of profits produced in workshops were divided among the workmen who produced it, pauperism would be no more known in our land. These were some of the higher aims of co-operation. If in years to come they would be told that it had succeeded in the workshops as it had already succeeded in the stores, the statistics of its progress would be eloquent and interesting 65-66

Doxsey (Rev. I.)

Thought that when they learnt that a million of working men were affected by this co-operative movement, and had been developing an amount of tact and prudence, and patience, and perseverance, which were among the noblest elements of British character, he was sure that they would have a higher esteem for working men than had yet been given to them . . 66

PAGE

Jones (B.). *Discussion on his Paper—contd.*

Foxwell (Professor H. S.)

Said that the principle of co-operation was partnership and common interest, and this must be extended until it embraced the workshop as well as the store; indeed it was more essential in the case of the producer than the consumer. Profit-sharing was distrusted both by employer and employed. The employer thought any profits given to the workman must be lost by himself. The workman thought that any profits he would obtain must be due to increased labour on his part. The fact was that there might be a large creation of profit in most concerns without any additional labour on the part of any concerned. If the worker were directly interested in profits, much waste and costly supervision might be saved . . . 67–8

Bourne (S.)

A wide distinction must be drawn between the application of co-operation to production and distribution. The task of distribution was comparatively easy; but in production capital must be invested in the purchase of plant and materials, and the business could not be carried on from hand to mouth in the same way as the distributive process. Co-operation was the right principle, and one of the great evils under which this country groaned was the large accumulations of capitalists, and the power which they had to compel consumers of articles at times to pay what they chose to exact . 68–9

Seton (G.)

Thought that the higher class of workmen and not the labourers benefited by co-operation 69

Craigie (Major)

Doubted the applicability of the co-operative principle to farming . . 69–70

Rawson (H. G.)

Doubted whether co-operation or profit sharing could make farming pay . 7

Hendriks (F., Chairman)

Calculated that one-tenth of the population of Great Britain was brought within the influence of co-operative societies, and that the business produced a return of 39 per cent. on capital. He thought that the results of the working class co-operative movement had so far been wonderfully successful, that they showed remarkable administrative power, and were destined as time went on to attain a far greater development than was indicated by their present position 70–72

Jones (B.), reply:

Pointed out that profits were divided according to trade and not capital, and therefore went to consumers. Referring to farming, he said they must give it a fair chance in what might be called a succession of seasons, and when that was done co-operators believed that they would have a fair profit left upon the average 72–3

Levi (Professor Leone). Reference to his death by Dr. T. Graham Balfour, F.R.S., at the ordinary meeting of the Society, 15th May, 1888 332

resolution concerning the death of, at a meeting of the Council of the Society on 10th May, 1888 340

notice of the death of, from the "Saturday Review" . . . 340–42

Library of the Society, additions to, in 1888 . . . . . 186-200, 414-32, 664-82, 838–55

Marriages. See *Registration.*

Meteorological Table by James Glaisher 206–7

Mines, work and wages in Cornish (see *Price*) 497

Mulhall (M. G.). Letter to M. de Foville 162

Neumann-Spallart (Dr. F. X. von). Translation of an obituary notice of the late Dr. von Neumann-Spallart, which appeared in a supplement to the 14th volume of the Austrian "Statistische Monatschrift." 343–6

Official Statistics, unsuitable subjects for 161

PAGE

PALGRAVE (R. H. Inglis). *Progressive Taxation as Levied in Switzerland, Cantons Basel-Stadt, de Vaud, and Uri* . . . 227

I. Introduction . . . 227
Economy in administration not sufficiently regarded . . . 227
Simplicity in plan often unequal in incidence . . . 228
Remarks by Mr. J. R. McCulloch, Sir G. C. Lewis, M. Leon Say, Mr. Gladstone, and Mr. J. S. Mill . . . 228
That system vicious which sets interest and duty of individuals at variance . . . 233
II. System of progressive taxation in Switzerland . . . 233
Occupations of inhabitants, Cantons Basel-Stadt, de Vaud, and Uri . . . 233
Taxation in three Cantons, 1862, 1872, and 1881 . . . 234
Taxation in Switzerland increased of late years . . . 234
Increase in direct taxation . . . 234
State taxes per head in Switzerland, 1862, 1872, and 1881 . . . 235
Canton Basel-Stadt. System of progressive taxation dates from 1840 . . . 236
Present law in Canton Basel-Stadt dates from 1887, in Canton de Vaud from 1886, in Canton Uri from 1886 . . . 236
III. Canton Basel-Stadt . . . 236
Principal sections of law of 1886 . . . 237
Income tax, taxpayers; division into classes . . . 237
Property tax, taxpayers; division into classes . . . 238
Tax on inheritances; exemptions; rates of tax . . . 238
Population of Canton; taxation in 1884 . . . 240
Apportionment of tax on income and earnings in 1884 . . . 240
Alteration in taxation by law of 1887 . . . 240
Taxable capital in 1883, 1884, and 1885 . . . 241
Comparison of incidence of property tax, 1875, 1879, and 1883 . . . 242
Alteration in number of taxpayers from 1875 to 1883; alteration in incidence of property tax, 1875 to 1879 . . . 242
Properties above 40,000*l.*, 1875, 1879, and 1883 . . . 243
Taxation of yearly earnings, law of 1887 . . . 244
Taxation of income derived from property; rate per cent., law of 1887 . . . 245
Effect of new system . . . 245
IV. Canton de Vaud . . . 245
Principal sections of law of 1886 . . . 245
General regulations . . . 246
Personal tax; basis of taxation; classes; rates . . . 246
Division of property and income into classes . . . 246
Rates of tax . . . 247
Income derived from property . . . 247
Exemptions and deductions allowed . . . 248
Property tax; division into classes . . . 248
Rate of tax on income derived from property . . . 251
Rate of tax on income from earnings; deductions allowed according to number in family . . . 252
Real property, amount of tax payable by the taxpayers in the different classes . . . 254
Number of classes in which a taxpayer may be taxed . . . 254
Number and classes of taxpayers . . . 255
V. Canton Uri . . . 256
Principal sections of law of 1886 . . . 266
Poll tax . . . 256
Property on which tax is charged . . . 256
Property tax; division into classes . . . 256
Income tax; division into classes . . . 257
Income tax; proportion per cent. of tax on different amounts of income . . . 257
Differences in system in the three cantons . . . 258
VI. Progressive taxation in England . . . 258
Rates of income tax imposed by Mr. Pitt in 1799, and by Mr. Addington in 1803 . . . 258
Abatements allowed in income tax at present time . . . 259
Triple assessments; Mr. Pitt . . . 260
VII. General conclusions . . . 264
Abatements preferable to progressive taxation . . . 265
M. Leon Say on system in force in Switzerland . . . 265
Luxuries should be taxed, but danger of tax on capital . . . 267
Table I. Swiss census of 1880; principal occupations of inhabitants, Cantons Uri, Basel-Stadt, and de Vaud . . . 233
—— II. Taxation per head of population, Cantons Uri, Basel-Stadt, and de Vaud, 1862, 1872, and 1881 . . . 234
—— III. Switzerland; State taxes per head of population, 1862, 1872, and 1881 . . . 235
—— IV. Canton Basel-Stadt. Division of property into classes . . . 238
—— V. „ Division of income into classes . . . 239
—— VI. „ Taxation in 1884 . . . 240
—— VII. „ Apportionment and classes charged with taxes on income and earnings, 1884 . . . 240
—— VIII. „ Present and future incidence of taxation . . . 241
—— IX. „ Amount of taxable capital (*Steuer Kapital*) . . . 241

PAGE

PALGRAVE (R. H. Inglis). *Taxation in Switzerland—contd.*

Table X. Canton Basel-Stadt. Town district (*Stadt Bezirk*); comparison of incidence of property tax in 1875, 1879, and 1883 242
— XI. „ Alterations in incidence of property tax, 1875-83 242
— XII. „ Alterations in incidence of property tax, 1875-89 243
— XIII. „ Properties above 40,000*l.* . . . 244
— XIV. „ Total taxation proposed by law of 1887, on income derived from property and earnings 244
— XV. „ Income from property; rate per cent. 245
— XVI. Canton de Vaud. Division of property into classes; law of 1886-87 246
— XVII. „ Division of income into classes; law of 1886-87 247
— XVIII. „ Rate for personal tax, according to the class of the taxpayer; law of 1886-87 . . 247
— XIX. „ Tax on real property (*impôt foncier*) in 1886, and the alteration by the law of 1886-87 . 249
— XX. „ Tax on capital (*capitaux*) in 1886, and the alteration by the law of 1886-87 . . 250
— XXI. „ Tax on pensions and income derived from property (*pensions, rentes, usufructs*) in 1886, and the alteration by the law of 1886-87 251
— XXII. „ Taxation on income derived from earnings in 1886, and the alteration made by the law of 1886-87; with the rates on bachelors and married men, and the deductions made for family charges, for children from *one* to *twelve* in number . 252
— XXIII. „ Taxpayers; real property divided into three classes 254
— XXIV. „ Number and value of personal and real estates divided into seven classes. . 255
— XXV. Canton Uri. Property tax; rates of tax 256
— XXVI. „ Tax on profits: income tax; rates of tax . 257
— XXVII. „ Division of income tax into classes; rate of income tax and proportion per cent. of amount of income tax to income 257

Discussion on Mr. R. H. I. Palgrave's Paper:

Hendriks (F.)

Apprehended that the meeting would be of opinion that some parts of the Swiss system of progressive taxation were excessively tyrannical, and others of a confiscatory character. He hoped that the example of Switzerland would not be considered as a precedent for further progress in the direction of progressive taxation 268–70

Garnett (F. B.)

He was satisfied that if Sir Robert Peel, in 1842, had attempted to revert to the arrangements which existed under the former income tax Acts, in which incomes of various amounts from 50*l.* to 150*l.* were chargeable at different rates, the income tax, instead of subsisting as it had done from 1842 to the present time, and with a prospect of still further endurance, would very likely have been condemned at the end of three years for which it was originally imposed 270–71

Vernet (Mr.)

Said that the new taxes had rendered property very unsaleable . . 271–2

Elliott (T. H.)

Graduated taxation was a very good servant, but a very bad master, and he was convinced that any step in the direction of such taxation ought to be taken with the profoundest caution, because the troubles resulting might be greater than the benefits which progressive taxation could possibly be made to confer 272–3

Bourne (S.)

Suggested whether in this country we did not approach much more nearly than was ordinarily thought to a system of graduated taxation, not by altering the incidence of taxation upon any one description of property, but by taxing it in so many different ways, that persons who had a large income really did pay a larger proportion by reason of the many sources from which their incomes were drawn upon 273–4

Rawson (Sir R. W.)

Thought that the system of graduated taxation sufficient to crush capital, sufficient to prevent any Swiss citizen aspiring to rise by means of industry

PAGE

PALGRAVE (R. H. Inglis). *Discussion on his Paper—contd.*
  Rawson (Sir R. W.)—*contd.*
    and applied intelligence, and it indicated the power of the democracy to squeeze those who by intellect and exertion had raised themselves above their fellows 274
  Powell (F. S.)
    Doubted the advantage of having high death duties, and thought our policy should be to encourage the investment of capital at home 274-5
  Palgrave (R. H. Inglis), reply:
    Thought it was only the extremely admirable and gentle way in which the income tax had been handled in this country, that had enabled the country to bear it up to the present time 275

PORTS. The World's Big Ports 167
PRICE (L. L., M.A.). "*West Barbary;*" *or, Notes on the System of Work and Wages in the Cornish Mines* 494
    I. Introduction. The name of "West Barbary" 497
    Cornwall has sometimes been called "West Barbary;" and the name may be partly explained by the "air of antiquity" pervading the county . . 497
    This antiquity is illustrated by the permanence, among other examples, of the system of wages in the mines 498
    II. The permanence of the system of wages in the mines 499
    One reason for this permanence may be found in the remoteness and isolation of the district 499
    This is illustrated by—
    Its comparative lack of railways 499
    Its long immunity from political agitation 500
    And the antiquity of its mining industry 501
    Not indeed of copper, but of tin 501
    As the history of the Stannaries Court and Parliament proves . . . 503
    Within recent years, however, changes have been at work, such as—
    Bitter political contention 506
    And extensive emigration 506
    A second and more potent reason is to be found in the efficacy of the system itself
    For it is not peculiar to Cornwall 508
    And Cornish emigration is not without a precedent 508
    And the system has lasted through the varied vicissitudes of Cornish mining 509
    III. The nature of the system 509
    The system consists of two varieties—
    Tutwork and 513
    Tribute 513
    IV The origin of the system. 514
    Its origin is in all probability considerably remote; for the account given by E. Jars in 1765 514
    (Which seems to refer to a period of transition 515
    And to point to a yet earlier date for its original introduction) . . . 517
    Shows that even then the peculiarly Cornish practice of "ticketing" prevailed 517
    And may be reconciled with statements contained in earlier authorities
    V. Its subsequent history 519
    This may be traced in several authorities 520
    But the most important change is indicated by two authors, who are in accord with—
    Hints given in earlier authorities 520
    Evidence furnished to the Mines Commission of 1864 520
    And to a committee of Parliament in 1887 526
    And reports contained in recent issues of local newspapers 526
    Although the system of tutwork has encroached upon the system of tribute, yet tribute is not defunct, and the cause of the change will be shown later. 527
    VI. Its advantages 529
    These must be distinguished from the *extraneous* influence of Wesleyan Methodism 529
    And are—
    (1) The mitigation, if not prevention, of strife 529
    (Which illustrates the characteristic features of co-operative production—
    The elimination of the employer 532
    And not of the capitalist) 532
    (2) The coincidence of the interests of the men and the fortunes of the mine 533
    In consequence of which—
    The intelligence of the workmen is increased 534
    (Although this may be due partly to the diversified nature of their work . 535
    But chiefly to the system) 535
    Which is speculative in character 536
    And probably not very influential in encouraging thrift 537
    And the maximum of output is secured 539
    VII. Disadvantages and abuses 539

PAGE

Price (L. L., M.A.). "*West Barbary*"—*contd.*

Some of these are of a minor character . . . 540
And the system cannot be held entirely responsible for the excessive mortality 540
(Which has been largely due to the climbing of ladders . . . 543
Though it may indeed have been aggravated by the absentee ownership of the mines) . . . 545
Nor for the fraud—
(Which has been too common in Cornish mining . . . 546
And may be connected with the identity of merchants and adventurers . 547
And more intimately with the speculative nature of mining industry) . 548
(Which may be illustrated by the corner of 1870-72 . . . 548
And the recent action of a French syndicate) . . . 548
Nor for the grievance attaching to royalties and mine-leases . . . 550
But another abuse is related to the length of the intervals of payment; and the diminution of this length is connected with the other main change in the modern history of the system, the encroachment of tutwork on tribute 551
VIII. A comparison between tutwork and tribute . . . 553
The tributers enjoy in the highest degree the advantages of the system; for they are more responsible and more interested . . . 554
But they are also peculiarly exposed to its disadvantages, for their earnings are more irregular . . . 554
The wages of tutworkers fluctuate indeed . . . 554
According to the nature of the work . . . 554
Or the district . . . 556
Or the time . . . 556
And the different earnings of tributers may result in an equal average wage . 557
The tributers may also work in healthier parts of the mines . . . 558
But they often overwork . . . 558
And their earnings, though generally higher . . . 559
Are more irregular . . . 560
The comparitive decline of tribute may be ascribed partly to this irregularity 560
(And is indirectly connected with the decrease in the intervals of payment . 560
And also directly, as the tribute accounts can be made up so rapidly) . 561
But it may also be ascribed to the growth of mining knowledge . . 562
IX. Conclusion . . . 563
The new system is not free from abuses and complaints . . . 563
And the intermediate "kind of" tribute has no distant connection with the simple form . . . 564
But the reasons which have led to the encroachment of tutwork are powerful 565
And other changes may be impending, about which it would be dangerous to prophesy . . . 565
Table I. A tutwork "bal-bill" of the Devon Great Consols mine for November, 1849. (Taken from "Cornwall, its Mines and Miners," p. 147) 512
—— II. A tribute "bal-bill" of the Devon Great Consols mine for August and September, 1849. (Taken from "Cornwall, its Mines and Miners," p. 147) . . . 513
—— III. A tutwork "bal-bill" of Carn Brea mine for May, 1863. (Taken, together with IV—VII, from "Mines Commission Report," Appendix B, xii) 524
—— IV. A tribute "bal-bill" of Wheal Basset mine for October, 1863 . 524
—— V. A tribute "bal-bill" of Dolcoath mine for November, 1863 . . 525
—— VI. A tutwork "bal-bill" of Dolcoath mine for November, 1863 . 525
—— VII. A tutwork "ball-bill" of Dolcoath mine for November, 1863 . 526
—— VIII. A table showing the relative amounts of "labour cost" and "tribute" at Dolcoath, exhibited by reports furnished to three-monthly meetings in 1885-86. (Based upon extracts from local newspapers) . 528
—— IX. Average annual number of deaths per 1,000 Cornish miners, per 1,000 Northern colliers, and per 1,000 Cornish males in 1849-53. (Based upon tables in "Mines Commission Report," pp. x and xi) . . . 542
—— X. Average annual number of deaths per 1,000 miners and males from pulmonary diseases, 1860-62. (Extracted from "Mines Commission Report," p. xiii) . . . 542
—— XI. Average monthly wage in three different districts in 1837. (Taken from *Statistical Journal*, vol. i, p. 78) . . . 558
—— XII. Average monthly wage in four different mines in 1863 (*circa*). (Based on "Mines Commission Report." Q. 7995) . . . 555
—— XIII. Different rates of tribute in 1885-86. (Based on statements collected from local newspapers) . . . 556
—— A. Percentages of increase and decrease in population of Cornwall for decennial periods, 1801-81. (Based on "Census of England and Wales, 1881," vol. iv, pp. 9, 48, and 82) . . . 507
—— B. Amount of, and profit on, candles and powder consumed in a year in four mines. (Extracted from "Mines Commission Report," Appendix B, xi, p. 436) . . . 538

Prices and Agriculture in the seventeenth century. See *Agriculture* 649
and incomes, recent changes in (see *Giffen*) . . . 713
of commodities in 1886-87 (see *Sauerbeck*) . . . 154
Prussia. Statistics of incomes in. See *Incomes* . . . 635

PAGE

Raffalovich (A.). *The Effects of Shipping Bounties.* [Translated from the "Journal des Economistes," December, 1887] . . 141

Reference to a series of reports upon the condition of the shipping industries of France, Germany, England, and Italy, which the United States Government published in 1886 141
Views of the Secretary of State as contained in a despatch which accompanied the reports on the bounty system 141-2
Effects of the system 142
Protection and increased prices 142
De Tocqueville and American supremacy: high duties and the coasting trade 143-4
Development of the English merchant navy and trade, *tables* . . 144-5
Suez Canal and freight rates 146
Fluctuations of tonnage 147
France and the policy of bounties; growth of merchant navy and freights, *table* 148
French laws as to bounties 149-50
Bounties of no avail in stopping decrease of French sailing tonnage. During the ten years preceding the shipping bounty law the aggregate French tonnage had decreased 14 per cent., the Italian 1 per cent., while Germany had benefited to the extent of 15 per cent. During the four years 1880-83 the Italian tonnage continued to show a decline to the extent of 2·6 per cent., while that of France increased 8 per cent., and that of Germany nearly 7 per cent.; and thus, without the fictitious aid of bounties, the German merchant marine increased nearly as much proportionately as the subsidised French shipping 150
Germany has exhibited an improvement relatively greater than that of France, and without State aid 151
The number of steam vessels increased in the years 1880-83 37·3 per cent. in France, 45·6 per cent. in Germany, and 27·2 per cent. in Italy; while the tonnage increased during the same period in France 68·7 per cent., in Germany 73·6 per cent., and in Italy 39·4 per cent. The increase in Germany, where no bounties were paid, was relatively greater both in number and tonnage of vessels than in France, where large bounties were in force after 1881; *table* 151
M. Felix Faure, in his report upon the budget of the Minister of Commerce and Industry, states that the depressed condition of the merchant navy is due to the excessive development of the construction which has taken place during recent years, but that the greater strength of the merchant marine has enabled France to take a larger share in transports, *table* . 151-2
Review of the bounty system shows that though it was introduced with the object of benefiting the French shipbuilding industry, it has had a greater effect upon foreign shipbuilding, and has been instrumental in stimulating English shipbuilding. Bounties have not been successful in infusing new life in either shipbuilding or navigation, and it is cheaper to purchase vessels in England, where in spite of the cost of labour being perhaps a little higher, free trade allows of the production at a lower rate 153-4

Railway Statistics, defects of English (see *Danvers*) 1
and commercial Statistics of Canada (see *Colmer*) 74
Railways and Waterways, relative advantages of (see *Germany*) . 375
Registration of the United Kingdom:
England and Wales:
marriages, births, and deaths 201-5
comparative *table* of consols, provisions, coal, and pauperism, 1885-87 203
general meteorological *table* for 1887, by James Glaisher . . 206-7
Scotland:
births, deaths, and marriages, with bastardy *table* 208-11
Great Britain and Ireland:
summary of marriages, births, and deaths 211
Revenue of the United Kingdom. Net produce in quarters and years, 1884-87 220
Rivers, navigable (see *Germany*) 375
Royal Statistical Society:
report of Council, June, 1888 433-43
abstract of receipts and payments for 1887, with auditors' report . 445-7
comparative financial statement of 1887 with that of previous years 434-5
proceedings at ordinary meetings, with titles of papers read . 436-9
proceedings of the fifty-fourth anniversary meeting . . . 448-9
list of deceased Fellows during 1887-88 442-3

PAGE

RUSSIA. *Statistics of the Russian Empire.* An official report drawn up by M. Troinitsky, on the general condition of Russia in 1884-85 [from the "Times" of the 23rd May, 1888, and referring to the "Annuaire Statistique de la Russie"] 396–8

SAUERBECK (A.). *Prices of Commodities in* 1886 *and* 1887 . . 154

Statement of the result of the last two years and of the average of the decade 1878-87 as compared with the standard period of eleven years, 1867-77, which in the aggregate is equivalent to the average of the twenty-five years 1853-77 (see the Society's *Journal*, 1866, pp. 592, 593, and 648), *tables* . 154–7

SAXONY. Statistics of incomes in. See *Incomes* 635

SHIPPING. *The World's Big Ports.* [Extract from the "South Wales Daily News"] 167

Review of the tonnage of ten ports selected as being those which have more than 5 millions of registered tonnage entered inwards and cleared outwards in one year, *tables* 167–8

Conclusion that the "big" ports are becoming bigger 169

SHIPPING of the United Kingdom, 1885-87 216

STATISTICS. *Unsuitable Subjects for Official* 161

Question put to the Chancellor of the Exchequer relative to a return on "Imperial taxation exclusively borne by real and by realised personal property respectively," together with the answer. In his reply the Chancellor of the Exchequer said that he recognised the conjectural and speculative character of such returns, and thought that tables in which that element enters should be published rather by private statisticians than on the authority of the Government 161–2

STATISTICS, the abuse of. Letter addressed to M. de Foville by Mr. Michael G. Mulhall in reference to a criticism by the former on Mr. Mulhall's publications 162–3

errors in the use of (see *Balfour*) 683

of railways (see *Colmer*, *Danvers*).

TURNER (W.). The World's Big Ports. See *Shipping* 167

UNITED KINGDOM, statistics and incomes in. See *Incomes* . . 635

UNITED STATES, rejection of emigrants by 374

WAGES *of the Working Classes in Berlin* 823

The Berlin Statistical Society has endeavoured to overcome the difficulties which beset the statistician in collecting the returns as to the income of any population 823–4

Number of working men and women in Berlin 824

The average weekly wages paid by the trades comprised in the principal manufacturing industries for the period extending over the three years 1885-87, and grouped according to the system used in taking the census, *table* 825

The average weekly wages of male labourers compared with female labourers, *table* 826

Women have been paid at a rate lower than men, *table* 826

WATERWAYS and railways, relative advantages of (see *Germany*) . 375

WORK and wages in Cornish mines (see *Price*) 497

HARRISON AND SONS, PRINTERS IN ORDINARY TO HER MAJESTY, ST. MARTIN'S LANE.

JOURNAL

OF THE

Royal Statistical Society.

FOUNDED 1834. INCORPORATED BY ROYAL CHARTER 1887.

9, ADELPHI TERRACE, STRAND, LONDON, W.C.

PUBLISHED QUARTERLY. VOL. LI.—PART IV.

DECEMBER, 1888.

LONDON:
EDWARD STANFORD, 26 AND 27, COCKSPUR STREET,
CHARING CROSS, S.W.

PRICE FIVE SHILLINGS.

ROYAL STATISTICAL SOCIETY,

9, ADELPHI TERRACE, STRAND, W.C., LOND

Honorary President.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.

COUNCIL AND OFFICERS.—1888-89.

Honorary Vice-Presidents

(having filled the Office of President).

THE RT. HON. THE EARL OF DERBY, K.G.
JAMES HEYWOOD, ESQ., F.R.S., F.G.S., &c.
THE RIGHT HON. G. SHAW LEFEVRE, M.P.
THE RIGHT HON. LORD BRASSEY, K.C.B.
SIR JAMES CAIRD, K.C.B., F.R.S.
ROBERT GIFFEN, ESQ., LL.D.
SIR RAWSON W. RAWSON, K.C.M.G.,
THE RIGHT HON. G. J. GOSCHEN,

President.

T. GRAHAM BALFOUR, ESQ., M.D., F.R.S., F.R.C.P., &c.,
Honorary Physician to Her Majesty The Queen.

Vice-Presidents.

FREDERICK B. GARNETT, ESQ., C.B.
ROWLAND HAMILTON, ESQ.
ROBERT LAWSON, ESQ., LL.D.
THE RT. HON. THE EARL OF ROS

Trustees.

JAMES HEYWOOD, ESQ., M.A., F.R.S.
SIR JOHN LUBBOCK, BART., M.P.,
SIR JAMES CAIRD, K.C.B., F.R.S.

Treasurer.

RICHARD BIDDULPH MARTIN, ESQ., M.A.

Council.

SIR G. BADEN-POWELL, K.C.M.G., M.P.
ARTHUR H. BAILEY, F.I.A.
ALFRED EDMUND BATEMAN.
CHARLES BOOTH.
STEPHEN BOURNE.
EDWARD H. CARBUTT, M.I.M.E., J.P.
J. OLDFIELD CHADWICK, F.R.G.S.
MAJOR PATRICK GEORGE CRAIGIE.
PROFESSOR F. Y. EDGEWORTH, M.A.
THOMAS HENRY ELLIOTT.
PROFESSOR H. S. FOXWELL, M.A.
FREDERICK BROOKSBANK GARNETT, C.B.
ROWLAND HAMILTON.
NOEL A. HUMPHREYS.
FREDERICK HALSEY JANSON, F.L.S.
J STEPHEN JEANS.
CHARLES MALCOLM KENNEDY, C.B.
SIR JOHN B. LAWES, BT., LL.D., F.R.S.
ROBERT LAWSON, LL.D.
GEORGE BLUNDELL LONGSTAFF, M.A., M.
JOHN BIDDULPH MARTIN, M.A.
RICHARD BIDDULPH MARTIN, M.A.
FRANCIS G. P. NEISON, F.I.A.
WILLIAM OGLE, M.A., M.D., F.R.C.P., &
FRANCIS SHARP POWELL, M.P.
R. PRICE-WILLIAMS, M. INST. C.E.
JAMES RANKIN, M.P.
ERNEST GEORGE RAVENSTEIN, F.R.G.S.
THE RT. HON. THE EARL OF ROSEBE
SIR REGINALD EARLE WELBY, K.C.B

Honorary Secretaries.

JOHN BIDDULPH MARTIN, M.A.
ALFRED EDMUND BATEMAN.
MAJOR P. G. CRAIGIE.

Foreign Secretary.

JOHN BIDDULPH MARTIN, M.A.

Assistant Secretary and Librarian.

JOSEPH WHITTALL.

Bankers.—MESSRS. DRUMMOND AND CO., CHARING CROSS, S.W., LONDON.

EAGLE INSURANCE COMPANY.

79, PALL MALL, LONDON, S.W.

Directors.

Sir George Russell, Bart., M.P., *Chairman.*
Charles Bischoff, Esq., *Deputy-Chairman.*

Thomas Allen, Esq.
The Rt. Hon. Sir Wm. Hart Dyke, Bart., M.P.
The Right Hon. Sir James Fergusson, Bart., M.P., G.C.S.I.
The Hon. Thomas F. Fremantle.
Ralph Ludlow Lopes, Esq.
Henry Paull, Esq.
C. A. Lockhart Robertson, M.D., F.R.C.P.
Henry Rose, Esq.
Colonel The Hon. W. P. M. C. Talbot

Actuary and Secretary.

George Humphreys, Esq., M.A., F.I.A.

Report for the Year ending 31*st December*, 1887.

NET NEW BUSINESS	**£381,000**
PREMIUMS THEREON	**£12,100**
CLAIMS	**£365,000**

Interest yielded over **£4 10s.** per cent.

Report for the Quinquennium ending 31*st December*, 1887.

ASSURANCE FUND	**£2,703,807**
NET LIABILITY UNDER ASSURANCES	**£2,535,642**
SURPLUS	**£168,165**

SPECIMEN of BONUSES on POLICIES effected at Age 30 for £1,000 on which 5 Annual Premiums, amounting to £126 13s. 4d., have been paid.

Year of Valuation.	Cash Bonus.			Percentages.	Reversionary Bonus.			Percentage.
	£	*s.*	*d.*		£	*s.*	*d.*	
1877	24	0	0	19 per cent.	71	10	0	56 per cent.
1882	28	10	0	22 „	83	10	0	66 „
1887	30	0	0	24 „	88	10	0	70 „

The Assurance Fund (excluding £19,645 reserved for Annuities) on the 31st December, 1887, invested upon first-class securities, and yielding upwards of 4½ per cent. interest, is now upwards of 36½ per cent. of the total liabilities of the Company, and 14½ times the amount of the Annual Premiums payable.

The corresponding ratios in
1877 *were* 32 *per cent. and* 11 *times the Annual Premiums*, and in
1882 *were* 36 *per cent. and* 13 *times the Annual Premiums.*

During the past 39 years the Company has paid in Claims	**£8,695,000**
And divided Bonuses amongst the Assured, exclusive of those taken in Reduction of Premium, amounting to	**£1,151,000**

INTERIM BONUSES are given on Policies of five years old and upwards which become Claims between any two Valuations, the amount distributed in this way during the past 5 years being £13,500.